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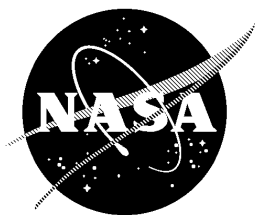
**Space Network (SN)
Web Services Interface (SWSI)
Client Software User's Guide
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Space Network (SN) Web Services Interface (SWSI) Client Software User's Guide

Original

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Preface

This document contains Local Operating Procedures (LOP) and overview material necessary for operation of the Space Network (SN) Web Services Interface (SWSI) Client software.

This document is under the configuration management of the Flight Programs and Projects Directorate's Space Network Project (Code 452) Configuration Control Board (CCB). Configuration Change Requests (CCR) to this document may be submitted to the Space Network Project's CCB along with supportive material justifying the proposed change. Changes to this document shall be made by Documentation Change Notice (DCN) or by complete revision.

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Abstract

The primary function of the Space Network (SN) Web Services Interface (SWSI) is to provide a standards-based cross-platform customer interface for performing Tracking and Data Relay Satellite (TDRS) and Demand Access System (DAS) scheduling and real-time service monitoring and control. A secure interface is provided to allow these functions to be performed either from the NASA Integrated Services Network (NISN) Internet Protocol (IP) Operational Network (IONET) or from the Internet.

This Client Software User's Guide provides the necessary information and guidelines for SWSI users to perform the required steps for operation of the SWSI Client in support of SN customer mission operations.

Keywords: *SWSI, NCCDS, SN, TDRS, DAS, DASCON*

Change Information Page

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DCN Control Sheet

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Section 1. Introduction

1.1 Purpose

This Space Network (SN) Web Services Interface (SWSI) Client Software User's Guide provides instructions for operating the SWSI Client software in support of SN customer mission operations.

1.2 Background

The primary function of SWSI is to provide a Java-based web interface to the Network Control Center (NCC) Data System (NCCDS) and to the Demand Access System (DAS) to perform SN customer scheduling, real-time service monitoring and control, and state vector storage. The SWSI provides the following capabilities:

- Standards-based customer interface for performing TDRS scheduling, real-time service monitoring and control
- Access from the Internet and NASA Integrated Services Network (NISN) Open & Closed Internet Protocol (IP) Operational Network (IONet)
- Secure access through encryption, certification, and authentication
- Cross-platform compatible client application
- Java-based Graphical User Interface (GUI)
- Supports full NCCDS/Mission Operations Center (MOC) interface, including flexible scheduling
- Ability to transmit customer state vectors to SN
- Orbiting or stationary state vector generation based on user input of geocentric (position & velocity) or geodetic (latitude, longitude, & altitude) coordinates
- Internet and Open IONet access to TDRSS Unscheduled Time (TUT)
- Test mode for performing Engineering Interface (EIF) testing and user training
- Minimal user requirements – Windows or Unix workstation with Java Virtual Machine (freeware), web browser, and SWSI client application software

1.3 Document Organization

This document is organized into 12 sections and 4 appendices. Following the Introduction (Section 1), this document presents procedures and reference material on the specified topics in the following order:

- SWSI Overview (Section 2)
- Client Installation and Setup (Section 3)
- General Operating Guidelines (Section 4)
- Startup and Login (Section 5)
- Main Control Panel (Section 6)
- Alerts (Section 7)
- Scheduling (Section 8)
- Performance Data Monitoring (Section 9)
- Service Reconfiguration (Section 10)
- State Vectors (Section 11)
- SSC Administration (Section 12)
- Alert Messages (Appendix A)
- NCC Active Schedule File Format (Appendix B)
- DAS Active Schedule File Format (Appendix C)
- UPD Detail Panel Contents (Appendix D)
- UPD Log File Format (Appendix E)
- Glossary
- Abbreviations and Acronyms

1.4 Applicable Documents

1. *Network Control Center Data System (NCCDS) System Requirements, 1998, 451-SRD-NCCDS/1998*
2. *Interface Control Document Between the Network Control Center Data System and Mission Operations Center, 530-ICD-NCCDS/MOC*
3. *Network Control Center Data System (NCCDS) Operations Concept, 1998, 451-OCD-NCCDS/1998*
4. *Interface Control Document Between the Demand Access System and the Space Network Web Services Interface, 451-ICD-DAS/SWSI*
5. *Space Network (SN) Users' Guide, 450-SNUG*
6. *Support Identification Code Dictionary, 532-808*

TUT User's Guide

Section 2. SWSI Overview

2.1 SWSI System Description

A block diagram showing the high level SWSI architecture is shown in Figure 2-1. A detailed knowledge of all the SWSI hardware and software components is not absolutely required to operate the SWSI Client software. However, a high-level view can be helpful toward understanding how to configure a client workstation to operate with the SWSI servers and to diagnose problems when errors should occur.

The main hardware components of SWSI are as follows:

- Client Workstation - user's desktop workstation, which can be any desktop that supports Sun Microsystems' Java Virtual Machine (JVM) 1.4.1.
- Backend Server – hosts most of the SWSI server applications; manages user login sessions, database storage, and the communications with NCCDS and DAS.
- Open Server – proxy server to allow Open IONet and Internet-based users to connect to SWSI and to access TUT. User requests are directed to Backend Server through the NISN Secure Gateway using a single predefined set of rules. This allows for the addition of new customers and users without the need for adding new Secure Gateway rules.

The main software components of SWSI are as follows:

- Client – executes on Client Workstation, provides Graphical User Interface (GUI) for performing SWSI client operations.
- Application Server – server process that the Client connects to in order to access SWSI services; keeps track of user requests and provides responses back to the Client. The Application Server runs on both the Open Server and the Backend Server.
- Isolator – server process that provides an interface for the Client with the SWSI Database; processes user requests and generates responses; communicates with the Client through the Application Server. A separate Isolator is required for each Application Server.
- SWSI-NCCDS Interface (SNIF) – server process that communicates with the NCCDS using the messaging protocol defined in the *NCCDS/Mission Operations Center (MOC) Interface Control Document (ICD)*. A separate SNIF is required to communicate with each NCCDS (operations and test).
- SWSI-DAS Interface (SDIF) – server process that communicates with the Demand Access System (DAS). Only one SDIF is required since there is no test DAS.

- Database – backend data storage; holds all customer configuration and scheduling data; allows access to customer schedules from any Client Workstation from any IP network for any authorized user.
- Open TUT Server – web server that mirrors the TUT web service provided by NCCDS on the Closed IONet. The Open TUT Server data is updated hourly.

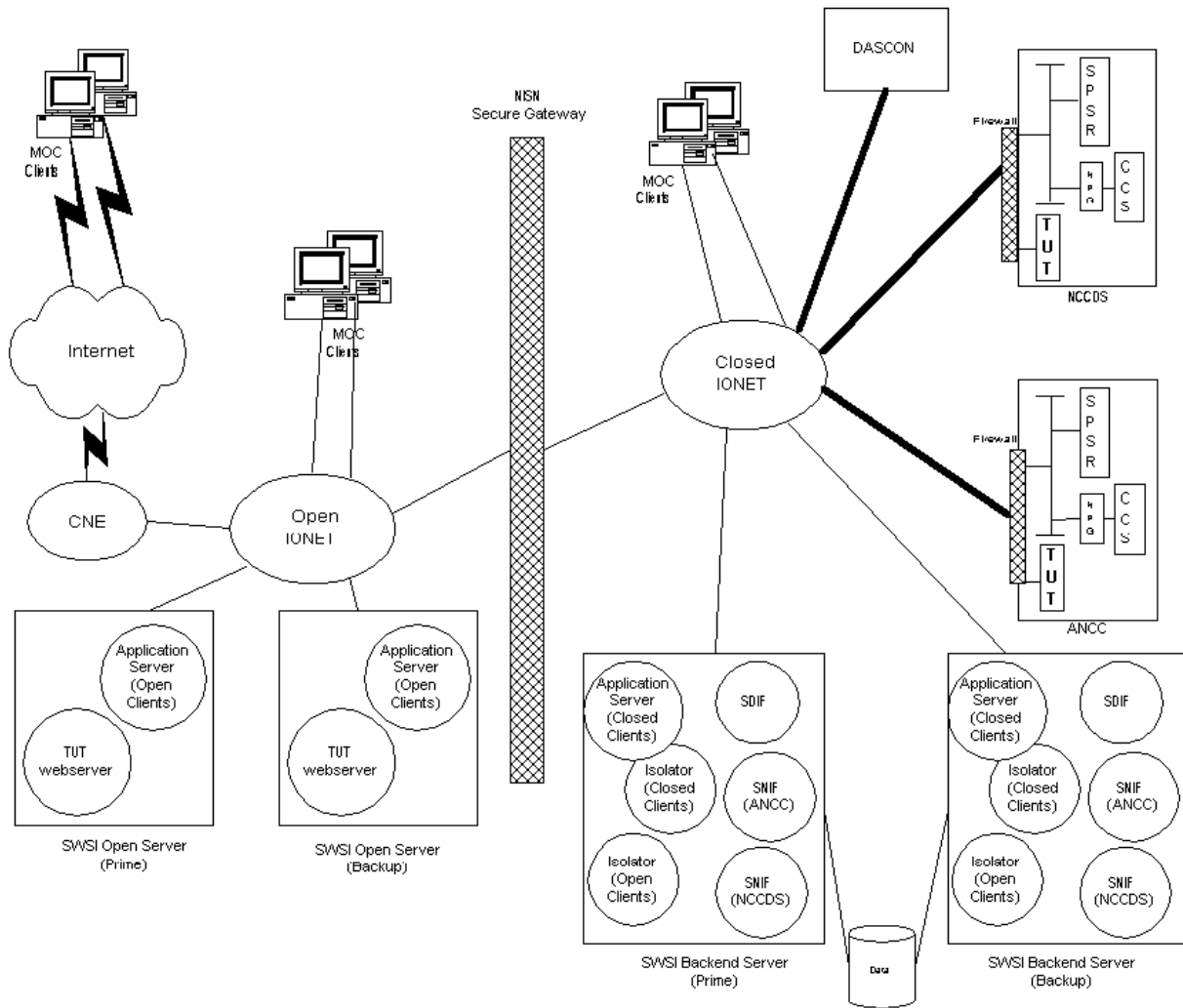


Figure 1-1. High Level SWSI Architecture

2.2 System Environment

This section describes the environment in which the SWSI operates and briefly discusses the interactions with external systems with which the SWSI interfaces.

Network Control Center (NCC) Data System (NCCDS) Operations

The NCC serves as the central control facility of the Spaceflight Tracking and Data Network (STDN), which consists of the Space Network (SN) and Ground Network (GN). The SN includes the Tracking and Data Relay Satellites (TDRSs) and two ground terminals, the White Sands Ground Terminal (WSGT) and the Second TDRSS Ground Terminal (STGT). The NCC schedules, controls, and ensures the reliability of the SN. The NCC is located within the Data Services Management Center (DSMC) at STGT. The SWSI communicates with the operational NCCDS on behalf of SWSI customers through implementation of the *NCCDS/MOC Interface Control Document (ICD)* protocol. All communications use Transmission Control Protocol (TCP) and are limited to those messages designated for full support customers.

Auxiliary Network Control Center (ANCC)

The ANCC serves primarily as a test facility for testing new NCCDS software releases and for performing Engineering Interface (EIF) tests with customer MOCs. ANCC is located at WSGT. SWSI interfaces with the ANCC to allow SWSI customers to perform interface testing and user training.

Service Planning Segment (SPS)

The SPS is the primary NCCDS subsystem used for performing SN service planning. SPS receives and validates customer service requests, generates and maintains the schedule, and disseminates the schedule to the appropriate SN elements and customers. The SPS also receives acquisition data from the Flight Dynamics Facility (FDF) and SN customers, stores the data, and disseminates acquisition data to WSGT and STGT. The SWSI maintains TCP connections with SPS for performing scheduling and vector storage on behalf of each SWSI customer.

Communications and Control Segment (CCS)

The CCS is the primary NCCDS subsystem used for performing SN service control and service assurance. Customers are able to perform real-time reconfiguration of an ongoing service through the use of Ground Control Message Requests (GCMRs). CCS is used to monitor the performance of active events and passes this information to customers in the form of User Performance Data (UPD) messages.

NCCDS Protocol Gateway (NPG)

The NPG performs message protocol translation between legacy entities that communicate in 4800 BBs and newer entities that use TCP messages. Since CCS communicates using 4800 BB protocol and the SWSI communicates using TCP, the SWSI establishes real-time connections with the NPG, using the NPG as a TCP proxy for the CCS.

NCCDS TDRSS Unscheduled Time (TUT) Server

The TUT World Wide Web (WWW) Server provides information about unscheduled TDRS resources. It consists of start and stop times of unscheduled use of the Single Access (SA), Multiple Access Forward (MAF), and S-band Multiple Access Forward (SMAF) antennas, and Multiple Access Return (MAR) and S-band Multiple Access Return (SMAR) links for each TDRS. This data is essentially the unused time in the schedule. The NCCDS TUT Server provides this service only to customers located on the Closed IONET.

Demand Access System (DAS)

The DAS expands the existing TDRSS Multiple Access Return (MAR) capabilities by building upon the Third Generation Multiple Access Beamforming Subsystem (TGBFS). The existing TDRSs provide pre-scheduled communication service to customers by using ground-based electronics to process signals emanating from customers that are relayed by the TDRS on-board phased array antenna systems. The TGBFS expands the capability of the TDRSs MAR system and allows service to be provided on a demand basis rather than on a pre-scheduled basis.

DAS Controller (DASCON)

The DASCON is responsible for scheduling and controlling all DAS-related hardware at the White Sands Complex (WSC). The SWSI communicates with the DASCON on behalf of SWSI customers through implementation of the *DAS/SWSI Interface Control Document (ICD)* protocol. All communications use Transmission Control Protocol (TCP).

NISN Secure Gateway

The NISN Secure Gateway is a rule-based firewall used to prevent penetration of hosts on the Closed IONET from less secure networks. A small number of rules is used to allow connection between the Open Server and the Backend Server components. All message traffic is channeled through this path. The rule set is static, meaning that Secure Gateway changes are not required in response to SWSI customers being added or removed.

2.3 Concepts and Terminology

A major advantage of using the SWSI as a user interface to NCCDS is that a detailed understanding of the messaging interface as defined in the *NCCDS/MOC ICD* is not required in order to access NCCDS services. All the details of the message protocol are already implemented by SWSI on behalf of the user. However, some degree of understanding of the ICD and SN scheduling is required in order to intelligently schedule SN services and to interpret results. Rather than duplicate ICD information in this User's Guide, references are made to appropriate sections of the ICD and other documents where additional information is available.

Nevertheless, in order to provide complete information in a single guide, a brief description of some common acronyms and terms that are prerequisite to understanding SWSI usage are given below. More detailed information can be found in the *NCCDS Operations Concept Document*, the *NCCDS System Requirements Document*, and in the ICD.

- Active Period - period of time covered by published schedules.

- Active Schedule - the collection of all events for which customer requests have been granted.
- Alternate Schedule Add Request (ASAR) - alternative schedule request that allows a second choice request to be scheduled if the first choice cannot be accommodated.
- Event - A combination of services (forward and return links, tracking, and end-to-end test) in a particular time sequence and with specific durations allocated to a particular customer spacecraft using a single TDRS for a continuous period of support.
- Event ID - uniquely identifies a schedule event. It is the same value as the Request ID of the associated request message. For events scheduled by an NCC operator, it is in the range 9,000,000 to 9,999,999.
- Fixed Event - event that has been scheduled for which resource and time allocations have been finalized.
- Flexibility - non-rigid specification of request parameters and SN services, which results in increased overall scheduling success.
- Flexible Event - event that has been scheduled, but for which resource and time allocations may not have been finally determined.
- Forecast Period - period of time in advance of publication (transmission) of the weekly schedule, during which schedule requests are received and the schedule is developed.
- Freeze Time - customer specified point at which NCCDS freezes requested start times and durations for a flexible event.
- Ground Configuration Message Request (GCMR) - sent by customer to NCCDS to reconfigure an ongoing service.
- Premium Service - event scheduled in response to a request received less than 45 minutes prior to the requested event start time and billed at a premium rate.
- Priority - The relative level of importance of each schedule add request, as specified by the customer (e.g., emergency, critical, normal, or supplemental).
- Prototype Event - combination of service specification codes, service durations, and relative start times defined in advance for a customer spacecraft for use in the scheduling process.
- Replace Request (RR) - customer request to delete a previous request or scheduled event and replace it with another. If the NCCDS is unable to effect the replacement, the original event remains on the schedule.
- Request ID - ID code in the range 0,000,001 to 8,899,999 that uniquely identifies a request message (SAR, ASAR, RR, SDR, GCMR, etc.) submitted to NCCDS.
- Schedule Add Request (SAR) - request to add a single event to the schedule.

- Schedule Delete Request (SDR) - schedule request to delete a previous request or scheduled event.
- Schedule Request - request to change a customer schedule (e.g., add, delete or replace an event).
- Schedule Result Message (SRM) - message sent from NCCDS to customer indicating disposition (granted, rejected, declined, etc.) of a schedule request.
- Service - functional support for a customer provided by the SN for a continuous period of time. Services include forward links, return links, tracking, and end-to-end test.
- Service Parameter - parameters (data rate, frequency, etc.) associated with a service.
- Service Specification Code (SSC) - code that specifies the configuration of a single service for a given customer.
- SN Customer - mission or project supported by the Space Network for operations, simulations, or testing.
- Support Identification Code (SIC) - unique four-digit identification code for a customer spacecraft.
- Support Identifier (SUPIDEN) – seven-character code used to identify the satellite or task being supported. It is broken into three parts: class, SIC, and function. Class identifies the major entity for which the support is being provided (e.g., Houston, network, GSFC). The SIC identifies the mission being requested. The function is an identification of the type of support being provided (e.g., launch simulation). SUPIDEN codes and their meanings are explained in the Support Identification Code Dictionary, 532-808.
- SWSI Operator – DSMC personnel responsible for operation of the SWSI servers.
- SWSI User – individual operator of SWSI Client application.
- TDRS Scheduling Window (TSW) – specification for a TDRS (generated by the customer or the customer designated facility) of a time period when the customer’s spacecraft may be supported by that TDRS. The TSW may be based on antenna view constraints, attitude and blockage effects, and any other mission timeline constraints that apply.
- User Performance Data (UPD) – sent from NCCDS to customer to provide performance and data quality information during an ongoing service.
- User Schedule Message (USM) – message sent from NCCDS to customer that provides details of a granted schedule request. SWSI uses USMs to construct an Active Schedule.
- Wait List Request (WLR) – request to place a declined request on a wait list.

Section 3. Client Installation and Setup

3.1 Customer Setup

The first step in becoming a SWSI user is to arrange to obtain SN services through the Customer Commitment Process. This process is described in Section 4 of the Space Network Users' Guide (SNUG). The Customer Commitment Office, NASA/GSFC Code 453, is responsible for arranging service for new missions.

Once an agreement has been reached, the mission planning phase is used to establish a DSMC configuration for the mission. The prospective customer project supplies the DSMC with information needed to fulfill mission support requirements. Customer information is maintained in the NCCDS database. Specific information in the database that is also required to configure a SWSI customer are the following:

- Spacecraft Identification Code (SIC)
- SUPIDENs
- Service Specification Codes (SSCs) and initial service parameter values
- Prototype Event Codes

This information is described in more detail in the SNUG. In addition, the following SWSI-specific information needs to be provided for inclusion in the SWSI server configuration and database:

- Schedule Request purge time – specifies in days how long after requested event start time to keep Schedule Requests before they are purged from the SWSI database. This affects how many requests are displayed in the Schedule Request Summary Panel as described in Section 8.6.
- Active Schedule upload – whether or not the customer would like to receive an Active Schedule file on connected workstations. This text file contains information about all granted requests scheduled to occur in the future with respect to transmission time of the file. The customer must also provide the following information about the upload process and file content:
 - Whether to send a new file when it changes and, if so, how often to check for changes, in minutes (default 5 minutes).
 - Whether to periodically send a new file regardless of whether there are changes and how often, in minutes (default 60 minutes).
 - Whether to include initial service parameter values.

- For enumerated parameter types, whether to send the numeric value or an enumerated text string.
- User Accounts – each SWSI user must have a separate account (group accounts are not allowed). The customer should provide a list of users requiring access, to include full user name, company, mission name, geographic location, phone number, and email address. Also for each user, indicate whether they are allowed Mission Manager privileges. This allows the user to edit the initial SSC parameter values.
- Internet Protocol (IP) Addresses – a list of IP addresses for all client workstations requiring connection to the SWSI Server(s). The customer may request access for any combination of workstations located on the Closed IONet, Open IONet, or Internet. Though not always the case, IP addresses for all workstations connecting to the SWSI Servers are treated by the SWSI DBA as For Official Use Only (FOUO). Transmission of IP addresses to the DBA should be done by the following accepted means for FOUO information: voice, fax, or PGP electronic mail.

Note that SWSI maintains separate databases for operations and test modes, allowing separate settings (SSCs, user accounts, etc.) for each mode.

3.2 Client Workstation Setup

Following are the minimum hardware and software requirements for running the SWSI Client application:

- [Java Runtime Environment](#) (JRE) version 1.4.1.
- Any platform supporting JRE 1.4.1, although the SWSI Client application has been thoroughly tested on only Windows 98/NT/2000, Solaris 7 & 8, and Linux.
- 128 Mbytes Random Access Memory (RAM).
- 2 Mbytes hard disk space (application size, excluding log space).
- 1024x768, 16 bit color display.
- Connection to Internet or NASA's IP Operation Network (IONet) (Open or Closed).
- Web browser (e.g., Netscape, Internet Explorer) to view TDRSS Unscheduled Time (TUT), and to download SWSI Client software and digital certificates.

Software and installation instructions are available from the Internet and Open IONet at <https://swsi-server.nascom.nasa.gov/certs/> and from the Closed IONet at <https://swsi-server.ops.nascom.nasa.gov/certs/>. The download sites also contain the appropriate JRE version for Windows, Solaris/Sparc, and Linux workstations. The following general steps are required in order to set up a client workstation:

1. Provide the SWSI DBA with your IP address as described in Section 3.1, so that you can access one of the download sites.
2. Generate a certificate through one of the SWSI web sites. Each user should generate their own certificate with their own private passphrase. Certificates and passphrases should not be shared.
3. Download the appropriate JRE version, either from the Sun web site or from the SWSI web site, and install it on your workstation. On the SWSI web site, it is available through the *Client Software* link.
4. Download the latest version of the Client software from one of the SWSI web sites. Separate versions are provided for Windows and Unix installations.
5. Install the Client software on your workstation using the detailed instructions provided on the web site. For multiple users on a single workstation, it is recommended that each user have the software installed in a separate folder/directory. This may duplicate some information on your hard disk, but the extra space used is minimal and greatly simplifies the installation.

It should be understood that as new versions of the Client software are released to provide enhancements or fix bugs, the workstation requirements may change. This is especially true of the JRE version. The latest version of the SWSI Client software, requirements, and instructions is always available via links from the main SWSI web page at the sites listed above.

3.3 Client Invocation and Usage

A Unix shell script and Windows batch file are provided with the Client installation so that the user can start the application without having to type a full command line. Following is a sample Client invocation if the user would like to invoke it interactively or would like to edit the provided script. This command should be executed while in the same folder/directory as where the provided *jar* files are located:

```
java -cp SWSI-cots.jar;SWSIclient.jar gov.nasa.gsfc.swsi.client.MainControlPanel <propdir>
```

Where <propdir> is the location of the property files described in the following section. If invoked with a “-v” option as follows:

```
java -cp SWSI-cots.jar;SWSIclient.jar gov.nasa.gsfc.swsi.client.MainControlPanel -v
```

Then the Client just prints the version number and exits, similar to the following:

```
SWSI Client Application Build 3 Patch 15 Beta 2 12/03/2002
```

3.4 Property Files

Property files are essentially configuration or preference files that are used to set up and control the execution of the SWSI Client application. The sample property files provided with the SWSI Client

download are sufficient to get started using the application, with the exception of the names of the digital certificate files as described in the installation instructions. However, there are some useful properties in these files that can be used to customize Client operation for the user. These files are described below.

In general, the property files may be changed with any text editor. Properties may be provided in any order. A “:” character separates the property name from its assigned value. A “!” or a “#” character at the beginning of a line is used to enter a comment. Boolean properties, which should be evident from examining the file(s), can have a value of *true* or *false*.

3.4.1 Secure Socket Layer (SSL) Properties (SSL.prop file)

The *SSL.prop* file contains the properties used for establishing an encrypted connection to the SWSI server. Following is a sample *SSL.prop* file:

```
! Client SSL properties
SetDebug : false
ClientDebug : true

ServerIPAddress : swsi-server.nascom.nasa.gov
ServerPortNumber : 4100
eifMode: false
selectSICsAtLogin : false

UseSSL : true
CipherSuite : SSL_RSA_EXPORT_WITH_RC4_40_MD5

! path to CA fingerprints property file
caPropFilePath : ./CA.prop

CertificateAuthorityFile : ./certs/SWSI-ca-cert.der
ClientCertificateFile : ./certs/user-cert.der
PrivateKeyFile : ./certs/enc-user-key.der

CertificateExpirationWarning : 30
AccountExpirationWarning : 30
AckFrequencyMultiple : 30

InputBufferSize : 2048
OutputBufferSize : 512

! automatic reconnection options
AutoReconnect : true
MaxReconnectAttempts : 10

! ReconnectDelay (time between reconnection attempts) in seconds
ReconnectDelay : 60
```

The meaning of each property is given below:

- SetDebug – defines whether debug output is generated by the SSL security system. If *true*, generate debug output. This is normally only useful to a developer when trying to troubleshoot problems. This can generate a lot of output, thus slowing down the SSL connection, so it is normally set to *false*.
- ClientDebug – defines whether debug output is generated by the Client application. As with SetDebug, this is normally only useful to a developer when trying to troubleshoot problems.
- ServerIPAddress – domain name or IP address of the server used in the Login Panel. This is normally set to *swsi-server.nascom.nasa.gov* for connection from the Internet or Open IONet, or *swsi-server.ops.nascom.nasa.gov* for connection from the Closed IONet.
- ServerPortNumber – Transmission Control Protocol (TCP) port number for the socket connection to the server used in the Login Panel.
- eifMode (optional) – defines whether to open the Login Panel with EIF mode selected. If *false* or not present, OPS mode is selected.
- SelectSICsAtLogin – for multimission users, defines whether a dialog will appear prior to completion of login to allow selection of which SICs will be used for that session. This is normally set to *false* since most users are authorized for only a single SIC. Setting to *false* also indicates to use all authorized SICs for each session.
- UseSSL – defines whether the socket connection to the server will be encrypted. Since the operational servers do not allow unencrypted connections, this should always be set to *true*.
- CipherSuite – defines the algorithm used to establish the SSL connection to the server. This is normally set to match the setting on the server and should not be changed unless under the direction of the SWSI DBA.
- CaPropFilePath – file name of the properties file that contains the fingerprint(s) of the Certificate Authority's public certificate that is to be accepted. The file is distributed with the Client software, and the user should change neither the file nor the property value.
- CertificateAuthorityFile – file name of the certificate authority's public digital certificate. This is used to check the digital signature on the certificate presented by the server for authentication. The file is distributed with the Client software, and the user should change neither the file nor the property value.
- ClientCertificateFile – file name of the user's public digital certificate. The user enters this when installing the Client software for the first time, or when installing a new certificate with a different file name.
- PrivateKeyFile – file name of the user's encrypted private key file. This is used to digitally sign the public digital certificate for presentation to the server. The user enters this when installing the Client software for the first time, or when installing a new certificate with a different file name.

- **CertificateExpirationWarning** – number of days before a certificate expires that the user will receive an expiration warning during login. The warning will appear during each login session until a new certificate is installed. Certificates are generated with an expiration of 365 days. The warning value is initially set to 30 days.
- **AccountExpirationWarning** – number of days before a user’s account expires that the user will receive an expiration warning during login. The warning will appear during each login session until the account is renewed. The SWSI DBA sets the account expiration time.
- **AckFrequencyMultiple** – maximum time, in seconds, that the Client should wait before sending an acknowledgment (ack) to the server when the Client is receiving no data. The Client normally sends an ack after receiving data from the server, but only after the Client is able to process all the outstanding data on the socket. The redundant ack produced by this time ensures that the Client continues to receive data even if the server fails to receive the normal ack. The ack timeout also functions as a keepalive message to notify the Client when a connection problem has occurred, so that the connection doesn’t remain in a half-open state where the server has closed the connection but the Client may think it is still open.
- **InputBufferSize** – TCP socket read buffer size, normally set to match the server’s output buffer size. The user should not change this unless directed to do so by the SWSI DBA or System Administrator.
- **OutputBufferSize** – TCP socket write buffer size, normally set to match the server’s input buffer size. The user should not change this unless directed to do so by the SWSI DBA or System Administrator.
- **AutoReconnect** – option to try to automatically reconnect to the server if the socket connection to the server is lost.
- **MaxReconnectAttempts** – if *AutoReconnect* is *true*, this property is the maximum number of reconnection attempts that will be made each time the connection is lost. If *AutoReconnect* is *false*, this property has no effect.
- **ReconnectDelay** – if *AutoReconnect* is *true*, this is the delay in seconds between each reconnection attempt.

3.4.2 Logging Properties (log.prop file)

The *log.prop* file contains the properties having to do with the processing of input and output files, as well as some miscellaneous properties. Following is a sample *log.prop* file:

```
!SWSI Client Log settings

BringToFront : false
WriteToLog : true
LogDir : ./log/current
ArchiveDir : ./log/archive
```

```

MaxAlertsToDisplay : 10000

! max file in bytes
MaxLogFileSize : 100000
SwitchLogFileAtMax : true

! output paths for real-time data files
ttmOutputPath : ./ttm
rctdOutputPath : ./rctdm

UPDDefaultFilePath : ./UPDs.prop
UPDPrimaryExpirationTime : 10
UPDSecondaryExpirationTime : 30

! option to perform UPD logging <true or false>
UPDLogging : false
! Directory for current UPD log files
UPDLogDir : ./upd/current
! Archive Directory for UPD log files
UPDArchiveDir : ./upd/archive
! maximum log file size that triggers archive <size in bytes>
UPDMaxLogSize : 50000

! switch for whether the Active Schedules will be written to file <true
or false>
asEnable : true
! directory where Active Schedules will be written
asOutputPath : ./active_sched

! Paths for State Vector Imports, Poll Time is in minutes, [1, 1440]
VectorQueuePollTime : 5
VectorQueueNCC : ./sv_NCC
VectorQueueDAS : ./sv_DAS
VectorArchiveNCC : ./sv_NCC/archive
VectorArchiveDAS : ./sv_DAS/archive

```

The meaning of each property is given below:

- **BringToFront** – option to bring the Alert Panel to the front (on top of any open panels or windows) when an alert message is received. Note that if the *Set Warnings* option in the Alert Panel is set and a critical message is received, the pop-up message will bring the Alert Panel to the front even if the *BringToFront* property is *false*. For more details on the Alert Panel, see Section 7.
- **WriteToLog** – indicates whether alerts should be logged. Alerts are logged to a file if this is set to *true*.
- **LogDir** – directory where the current (active) log file is created.
- **ArchiveDir** – directory to which archived (old) log files are moved.

- `MaxAlertsToDisplay` – buffer size for the Alert Panel. This indicates how many messages are kept on the scrollable panel. When the number of messages exceeds this amount, the earliest messages are removed.
- `MaxLogFileSize` – maximum output log file size in bytes. When the log file reaches this size and `SwitchLogFileAtMax` is set to *true*, the current log file is closed and a new log file is started.
- `SwitchLogFileAtMax` – indicates whether a new log file should be started if the current log file's size reaches the `MaxLogFileSize`.
- `ttmOutputPath` – directory to which files containing Time Transfer Messages (TTMs) received from NCCDS are written.
- `rctdOutputPath` – directory to which files containing Return Channel Time Delay (RCTD) messages received from NCCDS are written.
- `UPDDefaultFilePath` – for User Performance Data (UPD), this property defines the path to the properties file that defines the default UPD layouts to use for each SIC and service type.
- `UPDPriamaryExpirationTime` – time in seconds by which another UPD must arrive after which a service is flagged as expired.
- `UPDSecndaryExpirationTime` – time in seconds by which another UPD must arrive after which a service is removed from the list of active services in the UPD Summary Frame.
- `UPDLogging` – defines whether UPD messages received from NCCDS or DAS are logged.
- `UPDLogDir` – directory where UPD messages received from NCCDS or DAS are written to.
- `UPDArchiveDir` – directory to which archived (old) UPD messages are moved.
- `UPDMaxLogSize` – maximum UPD log file size in bytes. When the UPD log file reaches this size, the current UPD log file is closed and a new UPD log file is started.
- `asEnable` – defines whether the Active Schedules received automatically from the SWSI server are written to files.
- `asOutputPath` – directory where Active Schedule files received automatically from the SWSI server are stored. If `asEnable` is *false*, this property has no effect.
- `VectorQueuePollTime` – time (in minutes) delay between searches for state vector files.
- `VectorQueueNCC` – directory that is searched for user-created NCC state vector files.
- `VectorQueueDAS` – directory that is searched for user-created DAS state vector files.
- `VectorArchiveNCC` – directory to which old NCC state vector files are moved after transmission.
- `VectorArchiveDAS` – directory to which old DAS state vector files are moved after transmission.

Section 4. General Operating Guidelines

4.1 Introduction

The SWSI Graphical User Interface (GUI) consists of numerous SWSI panels that provide the means for a user to interact with the SWSI system. The GUI is loaded onto the client workstation and accepts user input from the keyboard and mouse. User data requests are sent to the SWSI server for processing.

4.2 Panels and Windows

A panel or window is a display area that is surrounded by a border. Some borders can be resized by moving the cursor to their edge and holding down the left mouse button while dragging the cursor. The edge of the window can be dragged to enlarge or reduce the current display size. Panels and windows are used interchangeably throughout this guide. An example of a window is shown in Figure 4-1.

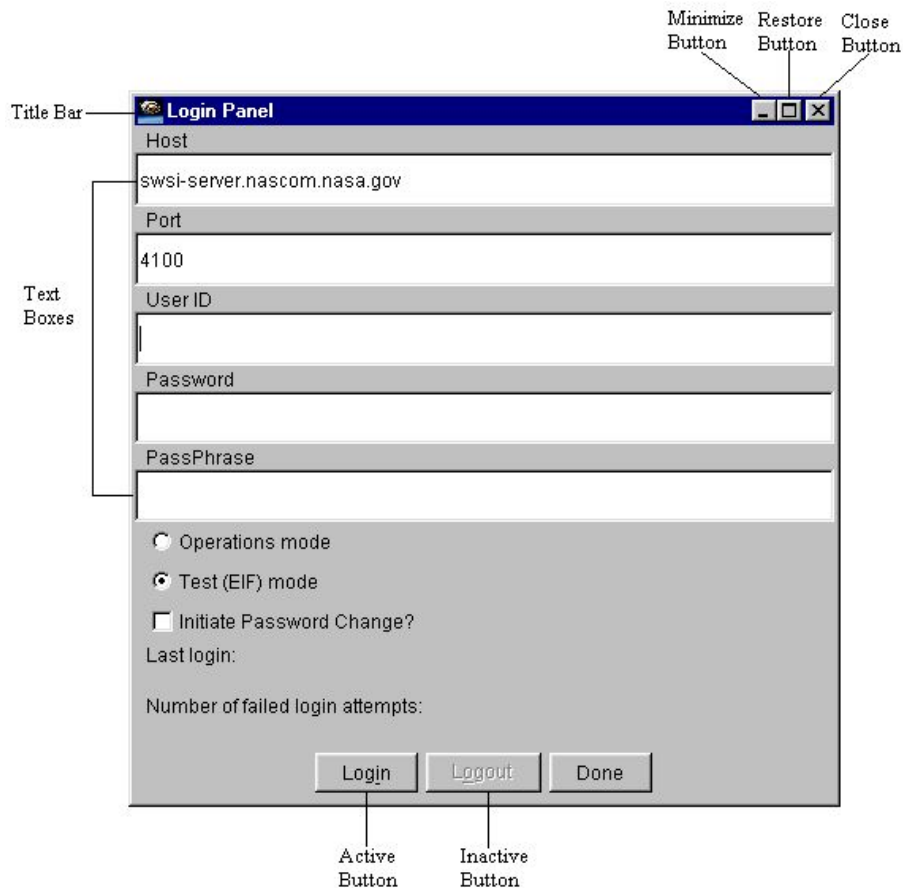


Figure 4-1. Sample Window

4.3 Mouse Movement

To perform a mouse click or clicks, move the cursor to the designated GUI component (button, menu selection, etc.) and press and release the left mouse button once. Clicking using the right mouse button will be explicitly stated as *click with the right mouse button*.

4.4 Minimize Button

The Minimize button is located on the upper right hand corner of most windows. Clicking on the Minimize button reduces the window to an icon. On Windows platforms, this icon appears on the task bar. Note that not all panels or windows are iconifiable.

To restore a minimized window, point to the icon of the desired window and double click the left mouse button. The window opens at the same position it occupied before being iconified.

4.5 Close Button

On Windows platforms, the Close button is located on the upper right hand corner of all windows. Clicking on the Close button normally causes the window to be removed from the user's display.

4.6 Window Title Bar

The Window Identification bar, located at the top of each window, displays the name of the window. Only one window will be active at a time. The title bar of the active window is shown in a different color than that of inactive windows. To establish an active window, move the cursor to the desired window and click the left mouse button. Characters typed on the keyboard are sent to components within the active window.

4.7 Active Buttons

Buttons with black text labels are active and perform an action if clicked upon.

4.8 Inactive Buttons

Buttons with gray text labels are desensitized and inactive. Buttons in this state will not perform any actions if clicked upon.

4.9 Radio Button

A radio button is a labeled set of choices with a small button to the left of each choice. Only one value in a radio button may be selected at a time. The currently selected value is represented by the button that looks depressed (pushed in).

4.10 Combination Box

A combination box provides a way to select one of a set of options and is similar to a radio button in operation. A combination box looks like a text box that shows the current selection with a down arrow button on the right. When pressed, the down arrow displays a menu of text choices.

4.11 Scrollbars

A scrollbar is an object that allows you to view a large window within a smaller window called a viewport. Manipulating a scrollbar allows you to view portions of a larger window through the viewport. A scrollbar has three components: the scroll arrows, the scroll region, and the scroll box. The scroll box will change size depending on the percentage of information visible in the viewport. If all information is visible, the box will occupy the entire region (if the scrollbar remains visible). Scroll bars may be oriented vertically or horizontally. Use the scrollbar by clicking on the scroll arrows or by dragging the scroll box.

4.12 Time Component

A number of time entry objects can be found throughout the SWSI client. You can modify each of the components by using the up or down arrows or by typing the new value. Position the mouse cursor over the value of the time component you wish to change (year, day, hour, minute, or second). Left click on that field. Click the arrow buttons to increase or decrease the highlighted field or type in the new value.

4.13 Text Box

Some windows contain one or more Text boxes. A Text box is any place within which the user can type text or numbers on the screen.

4.14 Dialog Box

Dialog boxes are usually small windows containing a textual message that provide information pertinent for the current operational context. They may solicit a response from the user and may be of type Information, Alert, Note, or Error.

4.15 Menu Bars

Windows may have a bar of pulldown menus that provide various operations for control. The window menu bar is located directly below the window title bar. Menu Bar pulldown menus are accessed by moving the cursor over the desired label and clicking on the left mouse button. To select a menu entry on the resulting pulldown menu, drag the cursor along the menu until the desired option is highlighted. Then click the left mouse button.

Note: “...” indicates that another submenu will be displayed. Entries without a “...” perform an action immediately.

4.16 Tabular Displays

Tabular displays show data in tables. These tables can usually be sorted by column by clicking on the column header. Columns can be reordered by dragging a column header across other headers. Entries can be selected by clicking on the desired row.

Section 5. Startup and Login

5.1 Startup

To start the Client application, use one of the startup scripts provided with the Client distribution. For Unix systems, use the *runclient.csh* script. Be sure to first edit the script for your environment as described in the installation instructions. For Windows systems use the *runclient.bat* batch file or the shortcut created as described in the installation instructions. For either platform the Client may also be invoked as described in Section 3.3.

If the Client is started successfully, the startup screen shown in Figure 5-1 is displayed. After some time while the Client initializes, the Main Control Panel and the Login Panel appear. An overview of the functions available through the Main Control Panel is provided in Section 6.

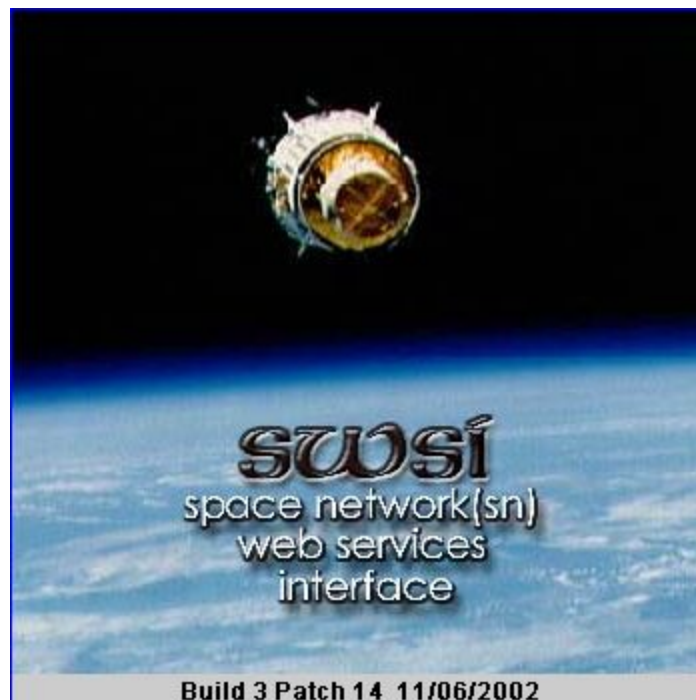
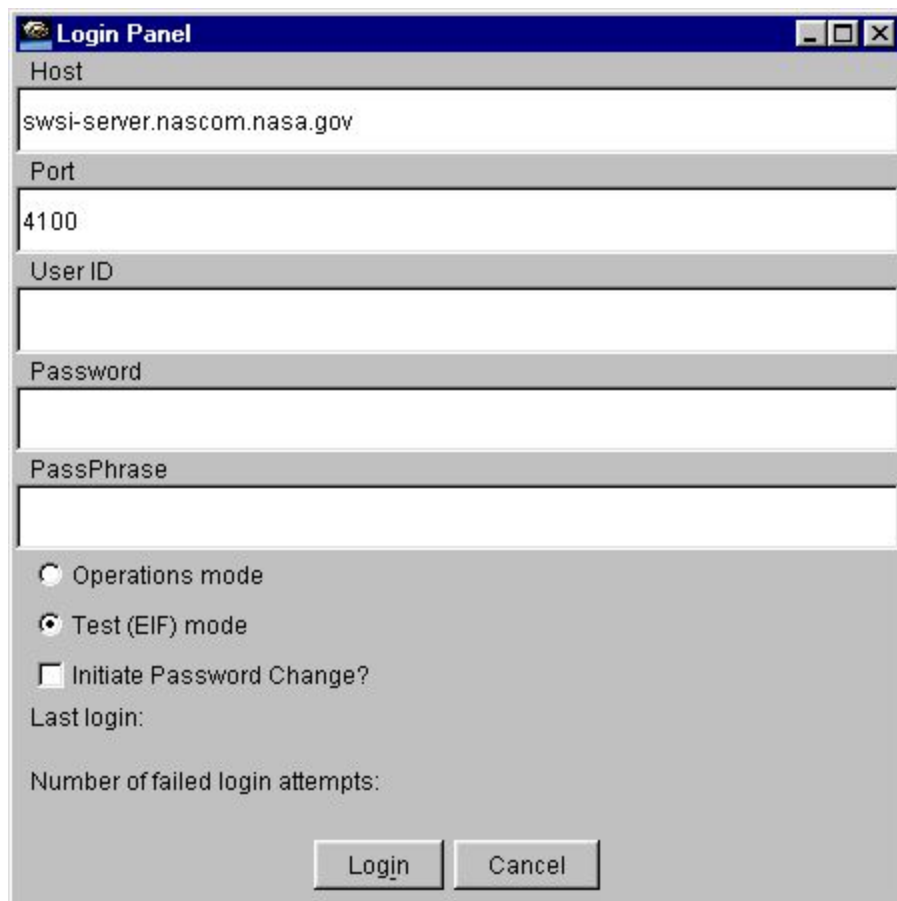


Figure 5-1. Startup Screen

5.2 Logging In

The Login Panel shown in Figure 5-2 is displayed when the Client first starts up and whenever the user logs off. This panel contains entries for the following:

- Host – domain name or IP address of the server to connect to. Initially set according to the *ServerIPAddress* property in the *SSL.prop* file.
- Port – Transmission Control Protocol (TCP) port number to connect to on the server. Initially set according to the *ServerPortNumber* property in the *SSL.prop* file.
- User ID – user account name for logging into the server.
- Password – user password. Each password character appears as an asterisk as it is entered.
- PassPhrase – passphrase for the security certificate validation. This is the same passphrase entered when generating a certificate as described in step 2 of Section 3.2, Client Workstation Setup. Each passphrase character appears as an asterisk as it is entered.



The screenshot shows a Windows-style dialog box titled "Login Panel". It contains several input fields and controls:

- Host:** A text field containing "swsi-server.nascom.nasa.gov".
- Port:** A text field containing "4100".
- User ID:** An empty text field.
- Password:** An empty text field.
- PassPhrase:** An empty text field.
- Mode Selection:** Two radio buttons. "Operations mode" is unselected, and "Test (EIF) mode" is selected.
- Initiate Password Change?:** An unchecked checkbox.
- Last login:** A label with no associated text field.
- Number of failed login attempts:** A label with no associated text field.
- Buttons:** "Login" and "Cancel" buttons at the bottom right.

Figure 5-2. Login Panel

Additionally, the panel contains options for operations or test mode. The mode selected at startup is controlled by the *eifMode* property in *SSL.prop*. In operations mode, the user is connected to the operational NCCDS at the Data Services Management Center (DSMC) at the White Sands Complex (WSC). In test mode, the user is connected to the Auxiliary NCC (ANCC) at WSC for performing Engineering Interface (EIF) tests or user training. Note that the SWSI server maintains separate databases for operations and test modes. The database contains User IDs and Passwords, so it is possible that an operations account may not be identical to a test account; i.e., a User ID may be valid only for operations mode, or a User ID that exists for both modes may have different passwords for each mode.

An option also exists for changing password after a successful login. It is advisable to change password on a regular basis in case it should become compromised. However, the server automatically tracks how long a password has been active and will expire a password after 60 days. When that happens, the user will be forced to change password after successful login.

Other information displayed in the panel are last login date and number of failed login attempts. The last login date is blank at startup and is not displayed until after the first login session has completed by logging out and again displaying the Login Panel. It then shows the date of the user's previous login.

The number of failed login attempts indicates how many times a login was attempted and failed, possibly because of an improperly entered User ID or password. After three failed login attempts with the same User ID, the server disables the user's account and the user must contact the SWSI DBA to have it reactivated.

To log in, enter User ID, Password, and PassPhrase. If the desired Host, Port, and Mode are different than what is displayed in these fields, then they may be changed at this time. To complete the login process, click on the Login button. At this time the Client attempts to connect to the server and displays the status box shown in Figure 5-3. Connection establishment also involves generation of digital keys, which may take 15-20 seconds. Key generation is only required the first time for each Client invocation, so subsequent connection attempts occur much more quickly.



Figure 5-3. Establishing Connection Status Box

Once a connection is established, the Login request is sent to the server and the status box shown in Figure 5-4 is displayed.



Figure 5-4. Login Sent Status Box

If the Login request is accepted, the status box shown in Figure 5-5 is displayed. The server retrieves initial setup information from the SWSI database and sends it to the Client. This setup information includes the list of SICs, SUPIDENs, and SSC codes for which the user has authorization, along with other lists, such as TDRS names and display layout information. Retrieval and transmission of this information may take 15-20 seconds.



Figure 5-5. Login Accepted Status Box

Once setup information is received, the Security Warning Banner shown in Figure 5-6 is displayed. Clicking *OK* closes the dialog box and allows the user to continue. Clicking *Cancel* returns back to the Login Panel.



Figure 5-6. Security Warning Dialog

If the *SelectSICsAtLogin* property in *SSL.prop* is set to *true* and the user is authorized for more than one SIC, then the SIC Selection dialog box shown in Figure 5-7 is displayed. This allows the user to select which SICs are active for this session. The NCC and DAS labels for each SIC indicates whether the SIC is authorized for using NCC (legacy) and/or DAS services. Any combination of SICs may be selected by CTRL-clicking the desired SICs. Shift-clicking allows selection of a range of SICs. Clicking *SELECT* instructs the Client to accept the selected list of SICs. Clicking *CANCEL* instructs the Client to use all authorized SICs for this session regardless of any selection(s).

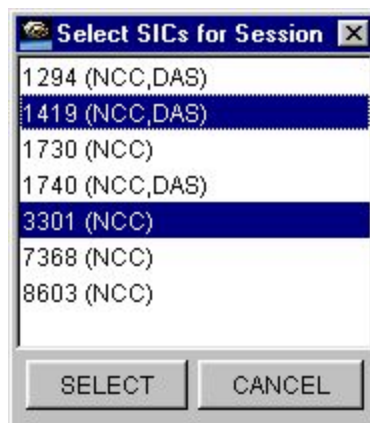


Figure 5-7. SIC Selection Dialog

After successful SIC selection, the login process is complete and the Main Control Panel appears as shown in Figure 5-8. An overview of the functions available through this panel is provided in Section 6.



Figure 5-8. Main Control Panel

5.3 Changing Password

A password change may be initiated either by the user by selecting *Initiate Password Change* in the Login Panel, or by the server when the password has reached its 60 day expiration. In either case the dialog shown in Figure 5-9 appears after the Client has established a connection with the server.

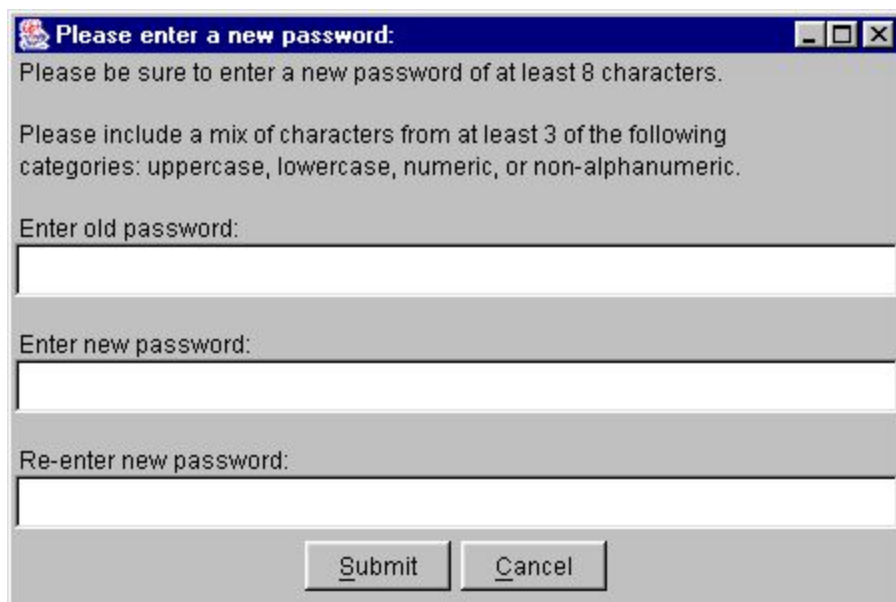


Figure 5-9. Password Change Dialog

After entering the user's old password, a new password should be selected that meets the stated criteria. The password must be at least eight characters long and contain at least one character from each of three categories of characters. For example, a password with at least one uppercase, one numeric, and one non-alphanumeric (punctuation mark) character would be a valid password. After

entering the new password twice for verification, the user clicks *Submit* to send the request to the server. Clicking *Cancel* causes the user's password not to be changed and for the user to login using the old password. If the old password is expired, the user will be forced to return to the Password Change Dialog and enter a new password.

After submitting the password change, the text box shown in Figure 5-10 appears. Processing of the change request by the server may take 15-20 seconds.



Figure 5-10. Password Change Submitted Status Box

Once the password change has been accepted, the dialog box in Figure 5-11 appears. Clicking either *OK* or *Cancel* closes the dialog box and allows the user to continue.



Figure 5-11. Password Change Accepted Dialog

5.4 Connection Problems and Automatic Reconnection

Occasionally the TCP connection between the Client and the server will be lost. This can happen due to a congested network, poor network performance, or a temporary failure of some network component. The Client has the ability to automatically reconnect to the server should the connection be lost. The following properties in *SSL.prop* control reconnection behavior:

- *AutoReconnect* – if *true*, auto-reconnect is enabled.

- **MaxReconnectAttempts** – if **AutoReconnect** is *true*, this property is the maximum number of reconnection attempts that will be made each time the connection is lost. If **AutoReconnect** is *false*, this property has no effect.
- **ReconnectDelay** – if **AutoReconnect** is *true*, this is the delay in seconds between each reconnection attempt.

If the connection is lost during a session, the status box shown in Figure 5-12 is displayed. Successive attempts are then made to reconnect to the server. When successful, the login process will occur automatically, culminating in an alert indicating that reconnection was successful.

At any time during the reconnection process, the user may interrupt by selecting Log-out from the User menu on the Main Control Panel.

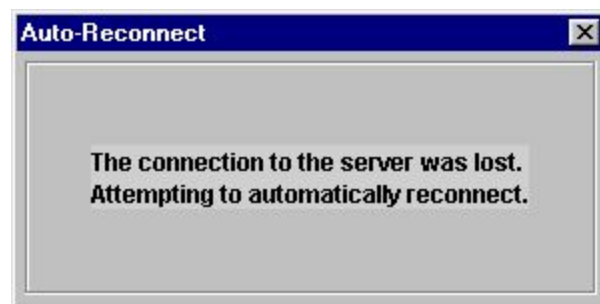


Figure 5-12. Auto-Reconnect Status Box

5.5 Login Problems

If a problem or error should occur during the login process, an error dialog similar to that shown in Figure 5-13 will appear. Table 5-1 lists all the error messages that can appear along with a description and solution.



Figure 5-13. Sample Login Error Dialog

Table 5-1. Login Error Messages

Error Message	Explanation
An invalid passphrase was entered.	The passphrase entered doesn't match the passphrase chosen when the digital certificate was generated.
No connection could be made to host swsi-server.nascom.nasa.gov at port #4100.	The Client was unable to connect to the server. The host and/or port name were entered incorrectly, the server is unavailable, a network problem is preventing communication with the server, or the client workstation's IP address is blocked from accessing the SWSI server.
The re-entered password did not match the first entry.	For a password change, the two new password entries did not match.
Failure changing password. The old password entered was invalid.	For a password change, the old password entry doesn't match what the server expects.
Failure changing password. Password validation failed: Invalid length password: 3	For a password change, the new password must be a minimum of eight characters.
Failure changing password. Password validation failed: Didn't meet password requirements. minimum requirements are: 3 contains lower case character: false contains upper case character: false contains numeric character: true contains special character: false	For a password change, the new password must have at least one character from each of three categories. In this case only one category, numeric characters, is represented.
Login failed for <userid>. Please make sure the account for <userid> has been activated, and that this user ID and the password entered are correct. Also make sure that another user is not logged in with the same ID from the same IP address.	The server rejected the login attempt for one of the following reasons: <ol style="list-style-type: none"> 1. The user ID does not exist on the server. 2. The password was entered incorrectly. 3. The account has been deactivated because of too many failed login attempts. 4. There is already another user with the same User ID logged in from the same IP address. Only one login session is allowed per User ID per IP address. 5. A previous session was interrupted by a lost connection that the server has not yet detected. The server may take up to two minutes to detect the loss, during which time the user will be unable to log in because of the single User ID per IP address rule. If still unable to login after correcting all of these problems, or if you suspect your account is not properly activated, contact the SWSI DBA or DSMC operator.
No reconnection could be made to host swsi-server.nascom.nasa.gov at port #4100. The server may be down. Please try again later using manual login.	Automatic reconnection failed.
Certificate Expiration Warning Your digital certificate will expire in 26 days. Please visit the SWSI web page to generate a new certificate.	A new digital certificate needs to be generated. See Section 3.2 for instructions.
Account Expiration Warning Your account will expire in 14 days. Please contact the SWSI System Administrator or DBA to renew your account.	User account is about to expire and must be renewed by the SWSI DBA at DSMC.

Section 6. Main Control Panel

6.1 Server Process Status

When the Client is first started, the Main Control Panel appears as shown in Figure 6-1.



Figure 6-1. Main Control Panel at Startup

The body of the panel contains connection indicators for the Application Server, Isolator, SWSI-NCCDS Interface (SNIF) and SWSI-Demand Access System (DAS) Interface (SDIF) server processes. These processes are described in more detail in Section 2.1. The status of all processes is shown as red *Disconnected* until the user performs a successful login, at which time the panel appears similarly to what is shown in Figure 6-2.



Figure 6-2. Main Control Panel after Login

Although the status provided is more useful to a SWSI server operator than to a Client user, it does provide the user some information that can help in assessing overall system status and to coordinate problem resolution with the SWSI operator at the Data Services Management Center (DSMC) at the White Sands Complex (WSC). In general, this is what green *Connected* status indicates for each process:

- Application Server – the user is successfully connected and logged in.

- Isolator – the server will accept and process user requests, such as reloading summary panels and submitting schedule requests.
- SNIF – messages can be exchanged with the NCCDS.
- SDIF – messages can be exchanged with the DAS.

If the SWSI server is operating normally, then all the processes should be indicated as green *Connected*.

6.2 Menu Options

Figure 6-3 shows the menu options provided by the Main Control Panel. Most options are disabled until the user has logged in. NCC and DAS specific submenus under the Scheduling menu are only enabled if the user is authorized for SICs configured for NCC and/or DAS related services. The Admin menu is only enabled for users with Mission Manager privilege.

SWSI						
User	Scheduling	Control/Monitor	State Vector	Admin	Time	Help
Log-in	NCC >	Alerts	Import	Edit SSCs	GMT Clock	About SWSI
Log-out	Create SAR	UPDs	Generate Geocentric		Local Clock	About User
Preferences	TDRS Scheduling Window	UPD Logging	Generate Geodetic			
Exit	DAS >					
	Resource Availability					
	Request					
	Create RAR					
	Playback Planning					
	Schedule Request Summary					
	Active Schedule Summary					
	Print >					
	Schedule Request Summary					
	Active Schedule Summary					

Figure 6-3. Main Control Panel Menu Options

6.3 User Menu

The User Menu contains options for logging in and out of SWSI server, for setting display preference, and for exiting the Client.

6.3.1 Log-in Menu Option

The Log-in menu option is available only if the user is not already logged in. Selection of this option causes the Login Panel to be displayed. The login process is described in Section 5.

6.3.2 Log-out Menu Option

The Log-out menu option is available only if the user is logged in. Selecting *Log-out* causes the user to be logged out of and disconnected from the server. After the connection has been terminated and the user logged out, the status of all server processes changes from green *Connected* to red *Disconnected* and the Login Panel appears.

6.3.3 Preferences Menu Option

The Preferences menu option is a submenu that allows selection of the Java Look and Feel (LAF). The following options are available:

- Metal Look and Feel
- Motif Look and Feel
- Windows Look and Feel
- Macintosh Look and Feel

The latter two options are proprietary and only available on the corresponding platform.

6.3.4 Exit Menu Option

The Exit menu option is used to exit from the Client application. Upon termination, the user is logged out from the server and the connection is closed.

6.4 Scheduling Menu

The Scheduling Menu provides options for requesting TDRS service and for reviewing and printing the status of those requests. These options are described in more detail in Section 8.

6.4.1 NCC Scheduling Submenu

The NCC Scheduling Submenu allows the user to access NCC-specific scheduling options. The following options are available:

- Create Schedule Add Request (SAR)
- TDRS Scheduling Window (TSW)

6.4.2 DAS Scheduling Submenu

The DAS Scheduling Submenu allows the user to access DAS-specific scheduling options. The following options are available:

- Resource Availability Request

- Create Resource Allocation Request (RAR)
- Playback Planning

6.4.3 Schedule Request Summary Menu Option

The Schedule Request Summary menu option causes the Schedule Request Summary Panel to be displayed. This panel displays a tabular summary of schedule requests previously submitted to NCC or DAS for all SICs for which the user is authorized and has selected to be active for this session.

6.4.4 Active Schedule Summary Menu Option

The Active Schedule Summary menu option causes the Active Schedule Summary Panel to be displayed. This panel displays a tabular summary of all schedule requests that have been granted and added to the NCC or DAS active schedule for all SICs for which the user is authorized and has selected to be active for this session.

6.4.5 Print Submenu

The Print Submenu contains options for printing Schedule Request Summary and Active Schedule Summary information.

6.5 Control/Monitor Menu

The Control/Monitor Menu provides options for viewing alerts and real-time performance data, and for controlling or reconfiguring ongoing services.

6.5.1 Alerts Menu Option

The Alerts menu option is used to display the Alert Messages panel, allowing the user to monitor real-time alerts. This panel is described in more detail in Section 7.

6.5.2 User Performance Data (UPDs) Menu Option

The User Performance Data (UPD) menu option is used to display real-time performance data for ongoing services. Options within the UPD Summary Panel are used to control or reconfigure ongoing services through the use of Ground Control Message Requests (GCMRs) for NCC services and reconfiguration requests for DAS services. UPD monitoring and reconfiguration capabilities are described in more detail in Sections 9 and 10.

6.5.3 UPD Logging Menu Option

The UPD Logging menu option controls whether or not UPD data is logged to a file on the client workstation. If UPD Logging is checked, then logging is enabled. UPD logging is described in more detail in Section 9.4.

6.6 State Vector Menu

The State Vector Menu provides options for importing, generating, and transmitting Improved Interrange Vectors (IIRVs) to NCCDS and/or DAS. These options are described in more detail in Section 11.

6.6.1 Import Menu Option

The Import menu option allows the user to select a user-generated file containing an IIRV for transmission to NCCDS and/or DAS. A standard file chooser is displayed, allowing the user to browse directories on the client workstation and select the state vector file to be transmitted.

6.6.2 Generate Geocentric Menu Option

The Generate Geocentric menu option allows the user to create and transmit a state vector entered in Geocentric Coordinates (XYZ position and velocity).

6.6.3 Generate Geodetic Menu Option

The Generate Geodetic menu option allows the user to create and transmit a state vector entered in Geodetic Coordinates (latitude, longitude, and altitude).

6.7 Admin Menu

The Admin Menu provides privileged user access to mission administration options.

6.7.1 Edit Service Specification Codes (SSCs) Menu Option

The Edit Service Specification Codes menu option allows the user to edit the default parameter settings for NCCDS and DAS SSC codes. Users must be authorized with mission administration privileges for this menu option to be enabled. SSC administration is described in more detail in Section 12.

6.8 Time Menu

The Time Menu provides clock displays for displaying the current date and time. A sample time display is shown in Figure 6-4. Year and Julian days are used for the date display and 24-hour time is used for the time display. Separate clocks are provided for Greenwich Mean Time (GMT) and Local Time. Both clocks are dependent on the local time and location settings of the client workstation, for which the user is responsible.



Figure 6-4. GMT Clock Display

6.9 Help Menu

The Help Menu makes available an electronic version of the User's Guide and the About SWSI options.

6.9.1 About SWSI Menu Option

The About SWSI menu option is used to determine the version of the SWSI Client software currently running on the client workstation. An example of the About SWSI dialog box is shown in Figure 6-4. Clicking OK closes the About SWSI dialog box.



Figure 6-5. About SWSI Informational Dialog

6.9.2 About User Menu Option

The About User menu option provides information about the user's current login session, including User ID, SWSI Server name, mode, and SIC selections. An example of the About User dialog box is shown in Figure 6-5. Clicking OK closes the About User dialog box.

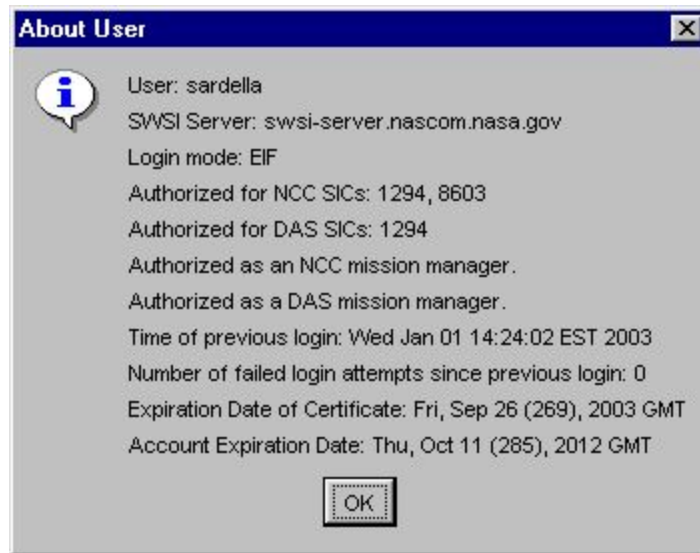
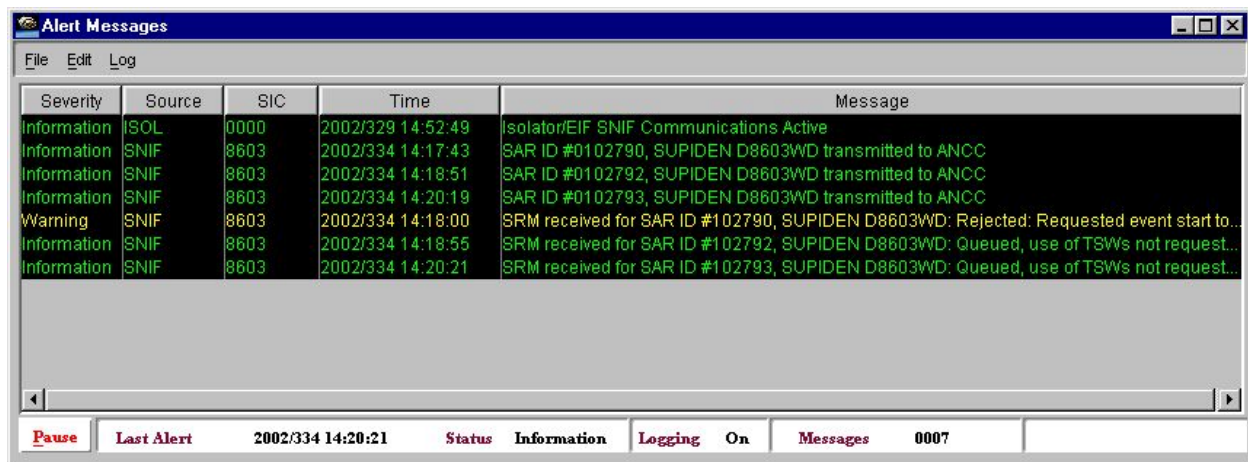


Figure 6-6. About User Informational Dialog

Section 7. Alerts

7.1 Alert Message Panel Overview

The Alert Message Panel is displayed automatically when the first alert is received or generated by the Client application. This panel may also be displayed manually by selecting the Alerts menu option in the Control/Monitor menu on the Main Control Panel. Figure 7-1 shows a sample Alert Message Panel.



Severity	Source	SIC	Time	Message
Information	ISOL	0000	2002/329 14:52:49	Isolator/EIF SNIF Communications Active
Information	SNIF	8603	2002/334 14:17:43	SAR ID #0102790, SUPIDEN D8603WD transmitted to ANCC
Information	SNIF	8603	2002/334 14:18:51	SAR ID #0102792, SUPIDEN D8603WD transmitted to ANCC
Information	SNIF	8603	2002/334 14:20:19	SAR ID #0102793, SUPIDEN D8603WD transmitted to ANCC
Warning	SNIF	8603	2002/334 14:18:00	SRM received for SAR ID #102790, SUPIDEN D8603WD: Rejected: Requested event start to...
Information	SNIF	8603	2002/334 14:18:55	SRM received for SAR ID #102792, SUPIDEN D8603WD: Queued, use of TSWs not request...
Information	SNIF	8603	2002/334 14:20:21	SRM received for SAR ID #102793, SUPIDEN D8603WD: Queued, use of TSWs not request...

Pause Last Alert 2002/334 14:20:21 Status Information Logging On Messages 0007

Figure 7-1. Alert Message Panel

Each entry consists of the following items:

- Severity – color-coded indication of alert severity. The following severity levels are defined:
 - Information (green) – indicates successful processing with additional information.
 - Warning (yellow) – indicates successful processing by SWSI, but with warning information, such as a request rejected by NCCDS or a communication problem.
 - Critical (red) – a SWSI software, system, or database problem has occurred. The problem requires resolution by a SWSI operator, system administrator, DBA, or developer.
- Source – subsystem generating the alert (Client, ISO, SNIF, or SDIF)
- SIC – Support Identification Code that the alert pertains to. Alerts are displayed only for SICs for which the user is authorized and has selected to be active for this session. A SIC of “0000” is used to broadcast alerts to all connected users.
- Time – time that alert was generated by the source subsystem.

- Message – alert message text.

Alerts can be sorted by any column by clicking on the column header. New alerts are added to the bottom of the sorted alerts. All columns can be resized by clicking and dragging the boundary between column headers. Columns can be re-ordered by clicking and dragging columns side-to-side. Rows can be selected for deletion or printing by clicking and dragging over the desired rows. Any combination of rows may also be selected by CTRL-clicking the desired rows. Shift-clicking allows selection of a range of rows.

The message text will often exceed the length of the panel. The panel can be scrolled horizontally to view the total message and/or the panel can be resized to make more of the messages visible.

A complete listing of alert messages is provided in Appendix A.

7.2 Status Bar

The Status Bar is located at the bottom of the Alert Message Panel and consists of the following items:

- Pause/Scroll button – alternates between pausing and automatically scrolling of the messages. In *Scroll* mode, alerts are added to the panel as they are received, with the panel automatically scrolling to the latest alerts. *Pause* mode allows the user to stop automatic scrolling to view particular alerts without having them scroll off the panel.
- Last Alert – time that most recent alert was received.
- Status – severity of most recent alert.
- Logging – indicates whether logging is currently turned on.
- Messages – total number of alert messages received for this session.

7.3 Properties and Alert Message Logging

The following properties from log.prop are used to control the Alert Message Panel and alert message logging behavior:

- BringToFront – option to bring the Alert Panel to the front (on top of any open panels or windows) when an alert message is received. Note that if the *Set Warnings* option in the Alert Panel is set and a critical message is received, the pop-up message will bring the Alert Panel to the front even if the *BringToFront* parameter is *false*.
- WriteToLog – indicates whether alerts should be logged. Alerts are logged to a file if this is set to *true*.
- LogDir – directory where the current (active) log file is created. This directory must exist prior to running the Client application.

- *ArchiveDir* – directory to which archived (old) log files are moved. This directory must exist prior to running the Client application.
- *MaxAlertsToDisplay* – buffer size for the Alert Panel. This indicates how many messages are kept on the scrollable panel. When the number of messages exceeds this amount, the earliest messages are removed.
- *MaxLogFileSize* – maximum output log file size in bytes. When the log file reaches this size and *SwitchLogFileAtMax* is set to *true*, the current log file is closed and a new log file is started.
- *SwitchLogFileAtMax* – indicates whether a new log file should be started if the current log file's size reaches the *MaxLogFileSize*.

Log files are automatically created with names of <UserID>_#.log where <UserID> is the UserID the Client is logged in under and “#” is an automatically generated sequence number. When the Client application is first started, the *LogDir* is searched for any existing log files. If any are found, the file with the largest sequence number is checked to see if it exceeds the *MaxLogFileSize*. If not, a new header and alerts are written to the file until it is full. Once the file is full (*MaxLogFileSize* reached) and if *SwitchLogFileAtMax* is *true*, the log file is closed and moved to the *ArchiveDir*. The sequence number is then incremented and a new log file is started.

7.4 File Menu

The File Menu contains options for printing and exiting the Alert Message Panel.

7.4.1 Page Setup Menu Option

The Page Setup menu option is used to specify printing options prior to printing alert messages. A sample Page Setup dialog is shown in Figure 7-2. (platform specific? Try on Solaris). Specify print options on this dialog and click *OK* to accept print option changes. Clicking *Cancel* resets all print options to previously selected values.

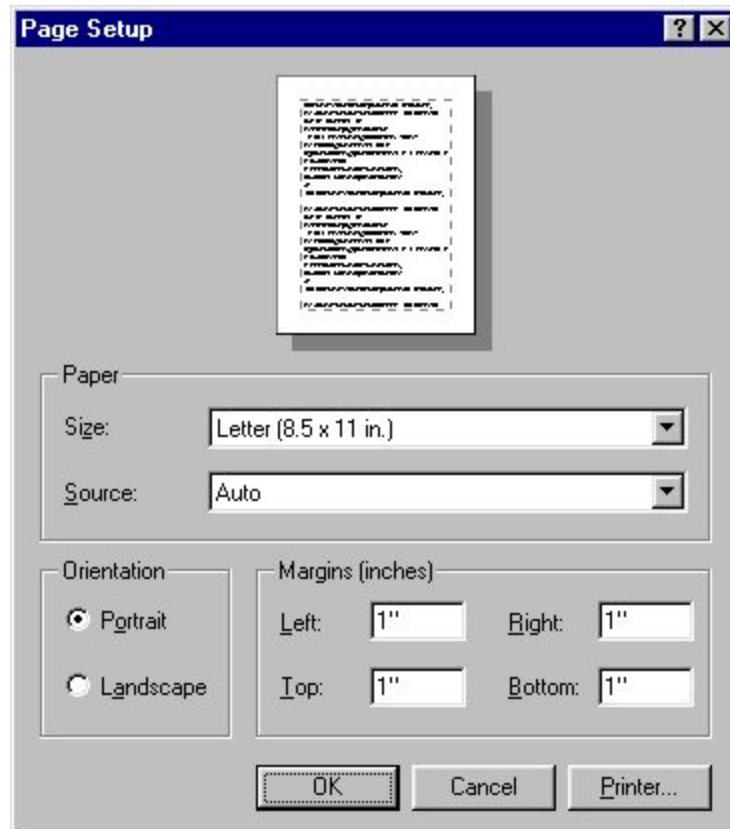


Figure 7-2. Page Setup Dialog

7.4.2 Print Menu Option

The Print menu option is used to print alert messages. Selecting Print causes the selected messages to be printed. If no messages are selected, then all the messages in the Alert Messages Panel are printed. Any combination of alerts may also be selected for printing by CTRL-clicking the desired rows. Shift-clicking allows selection of a range of alerts.

7.4.3 Exit Menu Option

The Exit menu option is used to close the Alert Message Panel. Alerts will still be received and logged. If critical alerts are received and the *Set Warnings* option is on, popup warning messages will still be generated. If the *BringToFront* in *log.prop* is set to *true*, the Alert Message Panel will automatically reappear for any alert that is received regardless of severity.

7.5 Edit Menu

The Edit Menu contains options for deleting messages, selecting or unselecting messages, and setting the warning level.

7.5.1 Delete Menu Option

The Delete menu option is used to remove alert messages from the Alert Message Panel. Select the alert message by clicking on the desired alert, and then select the Delete menu option. The Select All may be used to select all alert messages for deletion. Any combination of alerts may also be selected for deletion by CTRL-clicking the desired rows. Shift-clicking allows selection of a range of alerts.

7.5.2 Select All Menu Option

The Select All menu option is used to highlight all messages in the Alert Message Panel. Selecting Print or Delete while all messages are selected causes that action to be performed on all messages in the panel.

7.5.3 Unselect All Menu Option

The Unselect All menu option is used to remove highlighting from all messages in the Alert Message Panel.

7.5.4 Set Warnings Menu Option

The Set Warnings menu option is used to enable or disable the display of a critical warning dialog box every time a critical alert message is received. If a check mark appears before the Set Warnings option, then the option is enabled. A sample of a critical alert dialog is shown in Figure 7-3.

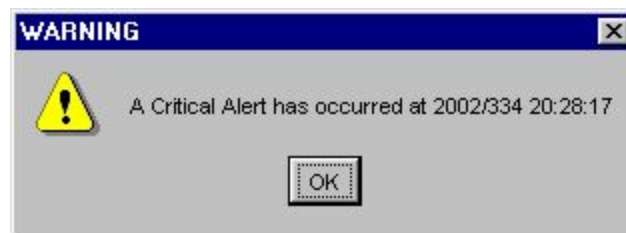


Figure 7-3. Critical Alert Dialog

7.6 Log Menu

The Log Menu contains options related to logging alert messages to a file.

7.6.1 Write Menu Option

The Write menu option is used to enable or disable the writing of alert messages to a log file. This option is preset by the *WriteToLog* property in the *log.prop* file. If a check mark appears before the Write option, then the option is enabled. The *Logging* field in the status bar also provides an indication of whether or not logging is enabled.

Section 8. Scheduling

8.1 Introduction

This section contains a detailed description of how to use the SWSI Client application to schedule SN services. It is not meant to be a comprehensive guide on how to schedule the SN or how to interface with the NCCDS or DAS. For more detailed information, refer to the *SN Users' Guide (SNUG)*, the *NCCDS Operations Concept Document*, the *NCCDS System Requirements Document*, the *NCCDS/MOC ICD*, and the *DAS/SWSI ICD*.

8.2 Creating an NCC Schedule Add Request

The Create SAR Panel allows the user to submit a Schedule Add Request to the NCC. The panel is shown in Figure 8-1. A similar panel is used for generating Alternate SARs (ASARs) and Replace Requests (RRs). A View SAR panel with the same layout is used for viewing previously submitted schedule requests. A new SAR may be created by selecting the Create SAR option in the Scheduling menu.

8.2.1 Main SAR Panel

The Create or View SAR Panel consists of the following event-level items:

- Message Class – SAR, ASAR, or RR.
- Request ID – only appears when viewing previously submitted requests that have been assigned a Request ID. The server assigns the Request ID after the SAR, ASAR, or RR has been submitted.
- ReferencedRequestID – only appears for ASARs or RRs. Refers to the Request ID of the original SAR or ASAR for which an ASAR or RR is being created.
- Explanation – only appears when viewing previously submitted requests for which a response in the form of a Schedule Result Message (SRM) has been received from NCCDS. Contains the result and explanation codes for the last SRM received, along with a text explanation.
- SUPIDEN – Support Identifier.
- TDRS – TDRS name. For flexible scheduling this may be a TDRS set name consisting a group of actual TDRSs. NCCDS determines which actual TDRS is scheduled for the event.
- Priority – indicates relative priority for this event. “1” is the highest priority, “9” is the lowest.
- Nominal Event Start Time – requested event start time.

- Plus Tolerance – amount of time after the Nominal Event Start Time that the event may actually be scheduled.
- Minus Tolerance – amount of time before the Nominal Event Start Time that the event may actually be scheduled.
- Freeze Interval – amount of time before event start time that the NCCDS will freeze requested start times and durations. This applies only to SARs that specify flexible start times and durations.
- Use TSWs to constrain scheduling – constrain scheduling according to a customer-supplied TDRS Scheduling Window (TSW), which specifies time intervals when the customer spacecraft is able to communicate with a TDRS.
- Wait List if unscheduled – if SAR is submitted during Active Period, this flag requests that the SAR be placed on a wait list in case it cannot otherwise be scheduled.

The 'Create SAR' panel includes the following fields and controls:

- Message Class:** SAR
- Request ID:** 0000000
- Explanation:** (Empty text area)
- SUPIDEN:** B129403
- TDRS:** 047
- ReferencedRequest ID:** None
- Priority:** 1
- Prototype Events:** ☐ **SSC:** ☒ **Add**
- Event List:**

Name	Type
A01	MAF
A02	MAF
B02	MAR
B03	MAR
B21	MAR
G01	EETF
G02	EETR
H01	SSAF
H03	SSAF
H05	SSAF
H07	SSAF
L02	SSAR
- Nominal Event Start Time:** 2002 034 20 23 00
- Plus Tolerance:** 00 00 00
- Minus Tolerance:** 00 00 00
- Freeze Interval:** 00 00 00
- Use TSWs to constrain scheduling:** ☐
- Wait List if unscheduled:** ☐
- Service Request Table:**

Number	SSC	Service Type	Nominal Start	Nominal Duration	CSN	SBSN	(+)Tolerance	(-)Tolerance	Min. Duration
1	A02	MAF	00:00:00	00:30:00					
2	B02	MAR	00:00:00	00:30:00					
- Buttons:** Remove, Move Up, Move Down, Remove All, Modify Service..., Parameters..., Submit, Cancel

Figure 8-1. Create SAR Panel

To specify service-level details when creating a SAR, the user must first select a SUPIDEN, then select whether a Prototype Event or individual services (SSCs) will be specified. Selecting Prototype Events clears the Service Request list and causes the list of available Prototype Event codes for that SUPIDEN to be displayed. A single Prototype Event may then be selected and added to the request. The Prototype Event code selected is displayed in the Service Request list, but not the services that make up the Prototype Event. Since SWSI does not provide this information, the user must know what services are included in the Prototype Event.

Selecting SSC causes the list of available SSCs for that SUPIDEN to be displayed. SSCs may then be selected and added to the request. Services that are part of the request are listed in a tabular Service Request area. This table shows the services and their flexibility parameters. A service may be removed from a request by selecting the service and clicking the *Remove* button. All services may be removed by clicking the *Remove All* button. Services must be listed in the order specified in Section 7.2.1.5 of the *NCCDS/MOC ICD*. SWSI allows the services to be placed in any order, but NCCDS may reject the request if the ordering specified in the ICD is not followed. Services may be reordered by selecting a service and clicking the *Move Up* or *Move Down* buttons. For a normal event, the ordering is as follows:

1. All forward service SSCs.
2. All return service SSCs.
3. All tracking service SSCs.

For a simulation event, the ordering is as follows:

1. Forward service no. 1 SSC.
2. Simulation service (EETF) SSC for forward service no. 1.
3. Forward service no. 2 SSC.
4. Simulation service SSC for forward service no. 2.
5. Forward service no. n SSC.
6. Simulation service SSC for forward service no. n.
7. Return service no. 1 SSC.
8. Simulation service (EETR) SSC for return service no. 1.
9. Return service no. 2 SSC.
10. Simulation service (EETR) SSC for return service no. 2.
11. Return service no. n SSC.
12. Simulation service (EETR) SSC for return service no. n.

13. All tracking service SSCs.

8.2.2 Service Flexibility Parameters

The service-level flexibility parameters may be modified by selecting the service and clicking the *Modify Service* button. This causes the subpanel shown in Figure 8-2 to be displayed. The Nominal Duration and Nominal Start are required standard parameters that specify the duration and relative start time for the service. The five remaining parameters are optional service-level flexibility parameters that are described in detail in Table 7-3 and in Appendix D of the *NCCDS/MOC ICD*.

Edit Service Flexibility Parameters

SUPIDEN B1294CS Service Number 01

SSC A02 Request ID 00000000

Nominal Start [Calendar Icon] [00] [00] [Up/Down Arrows]

Nominal Duration [00] [01] [00] [Up/Down Arrows]

Plus Tolerance [] [] [] [Up/Down Arrows]

Minus Tolerance [] [] [] [Up/Down Arrows]

☐ Minimum Duration [] [] [] [Up/Down Arrows]

☐ Coupled Service Number (CSN) [Text Box]

☐ Service Bounded By Service Number (SBSN) [Text Box]

[Update] [Cancel]

Figure 8-2. Service-level Flexibility Parameters

8.2.3 Service Parameters

The initial values of the parameters of a service may be viewed and edited by selecting the service and clicking the *Parameters* button. This causes a window similar to that shown in Figure 8-3 to be displayed. The list of parameters shown is dependent on the type of service. The window consists of a header that identifies the service and a split pane, with Fixed (non-editable) Parameters in the top half, Respecifiable (editable) Parameters in the bottom half, and a splitter bar separating the two. The splitter bar can be moved to display more or less of the Fixed Parameters or Respecifiable Parameters.

The image shows a software window titled "MAF Schedulable Parameters". At the top, a status bar displays "SUPIDEN B1294CS SSC A01 Type MAF" followed by "Defaults received" in green text. The window is divided into two main sections: "Fixed Parameters" and "Respecifiable Parameters".

Fixed Parameters:

- Maximum Data Rate: 1000 bps
- User Interface Channel: L04

Respecifiable Parameters:

- TSW Set ID: (empty text box)
- User Despun Antenna Type: No type (selected with a radio button). Other options are Type 2 and Type 1.
- Data Rate: 125 bps (shown in two adjacent text boxes)
- Receive Frequency: 210640419 10 Hz (shown in two adjacent text boxes)
- Doppler Compensation Required: Yes (selected with a radio button). Other option is No.

At the bottom of the window are three buttons: "Save", "Clear", and "Cancel". The "Clear" button is highlighted with a dashed border.

Figure 8-3. Service Parameter Values

When the window first appears, the header contains a notice in red saying, “Default values requested”. The Client then requests the default initial SSC values from the server. Once the values are received, the window is updated and the header is changed to say, “Defaults received” in green (as shown in Figure 8-3). If the parameters have been previously edited for this service request, then the header is instead changed to say, “Existing values shown” in yellow. The user may then edit the initial values and make the parameter value changes that apply to this service request. The current non-editable values are shown in the left column for reference. Changes are made by editing the values in the right column. By holding the cursor over an editable numeric text box, the user can display the valid range of values for that parameter. This is shown as a popup tooltip.

After making the desired changes, click the *Save* button to save the changes or click the *Cancel* button to discard the changes. The *Clear* button will reset all the parameter values to their SSC default values, allowing the user to start over. This is true even when cloning or replacing a SAR, which means that all the cloned values may be lost. Clicking *Save* causes all the changes to be validated and saved for the selected service. Validation includes format checks (i.e., making sure that the input can be parsed as numbers) and limit checks. Failed validation causes a popup message to be displayed identifying the parameter that failed and why. If the limit checks failed, the limits will be displayed as well. The user is then requested to correct the input before it can be saved. Saving the parameter values does not submit the request. The user can proceed to edit the parameters of other services or, if finished, to submit the request using the *Submit* button on the main SAR Panel.

8.2.4 Submitting a Schedule Request

Once the user has finished entering all the information for a schedule request, the request is submitted by clicking on the *Submit* button. This causes the request to be sent to the server, where a unique Request ID is assigned and the message is formatted for transmission to the NCCDS. Alerts are generated by the server for each step in the message exchange that results in the request either being rejected, or granted and placed on the active schedule. The Alert Message Panel may be used to monitor the progress of this exchange.

Following is a typical sequence of events for a successfully scheduled active period request:

1. The schedule request is transmitted to the NCC.
2. The NCC responds with an SRM indicating that the request has been accepted and queued for processing.
3. The NCC sends another SRM indicating that the request has been granted.
4. The NCC sends a User Schedule Message (USM), which provides details about the newly scheduled event. The SWSI server uses this information to add the event to the Active Schedule in the SWSI database.

Following is a typical sequence of events for a forecast period request:

1. The schedule request is transmitted to the NCC.
2. The NCC responds with an SRM indicating that the request has been accepted and queued for processing.

Since the request was made during the forecast period, no response will be received as to whether the request was granted or rejected until the NCC performs a batch scheduling run and activates a new schedule. When that happens, the NCC will send an SRM indicating whether the request was granted or rejected, along with a USM that SWSI uses to add the event to the Active Schedule.

Following is a typical set of alerts for the case where a schedule request is successfully granted:

SAR ID #0100845, SUPIDEN T8603EE transmitted to NCC
SRM received for SAR ID #100845, SUPIDEN T8603EE: Queued, use of TSWs not requested or not applicable
SRM received for SAR ID #100845, SUPIDEN T8603EE: Granted, fits in newest TSWs, based on customer request
Fixed Normal USM received for Event ID #100845, SUPIDEN T8603EE, TDE, Start Time 02/295 05:10:00

In this case, since the request was successful, all the alerts are of green (Information) severity. Following is a case where a request is rejected:

SAR ID #0102790, SUPIDEN D8603WD transmitted to NCC
SRM received for SAR ID #102790, SUPIDEN D8603WD: Rejected: Requested event start too close to current time

The SRM alert is of yellow (Warning) severity to indicate that there was a problem with the request such that it wasn't granted.

The SWSI server generates an alert for all SRMs and USMs received from NCCDS. The explanations shown in the SRM alert are the same as is described in Table 7-5, *Valid SRM Result and Explanation Code Combinations* in the *NCCDS/MOC ICD*.

8.2.5 Error Alerts

Listed in Table 8-1 are alerts indicating that a problem occurred in transmitting a schedule request outside of a normal rejection by NCCDS.

Table 8-1. Schedule Request Error Alerts

Error Alert Message	Severity	Explanation
Error transmitting SAR ID #xxxxxxx, SUPIDEN xxxxxxx to NCC, will retry later	Yellow	There was an error in transmitting the message to NCCDS. The message is saved and transmission will be attempted later. Another alert will be displayed when transmission is successful.
Unable to connect to NCC, will attempt later to send SAR ID #xxxxxxx, SUPIDEN xxxxxxx	Yellow	There was a problem connecting to the NCCDS. The message is saved and transmission will be attempted later. Another alert will be displayed when transmission is successful.
Schedule Request ID #xxxxxxx invalid: Unable to find Schedule Connection entry for SIC	Red	The SWSI database has not been properly configured for the SIC. The message is dropped. The SWSI DBA at DSMC should be contacted to correct the error.
Schedule Request ID #xxxxxxx invalid: <reason for invalid request>	Red	The Schedule Request is not properly formatted and will be dropped. This error should not occur and is an indication of a SWSI software error. SWSI development support should be notified.

8.3 DAS Resource Availability Request

TBS

8.4 Creating a DAS Resource Allocation Request (RAR)

TBS

8.5 DAS Playback Planning

TBS

8.6 Schedule Request Summary

The Schedule Request Summary Panel displays the previous schedule requests submitted for all SICs for which the user is authorized and has selected to be active for this session. The number of requests displayed is dependent on the Schedule Request purge time discussed in Section 3.1. The panel is shown in Figure 8-4. A summary of each request is shown in tabular form. The panel is displayed by

selecting the Schedule Request Summary option in the Scheduling menu. The panel initially appears with the *Reload* button disabled and labeled *Data Requested*. Once the data is received from the server, the panel is updated to display the data and the *Reload* button is enabled and labeled *Reload*. If the *Reload* button is pressed, it gets disabled and relabeled *Data Requested* until the latest data is received.

Start Time	Request ID	SUPIDEN	TDRS	Msg Class	Ref.Req.ID	Status	Creation Time
2002/293 21:45:00	2205	B1294CS	171	SAR	0	Deleted	2002/291 16:17:59
2002/294 21:45:00	2207	B1294CS	171	SAR	0	Deleted	2002/291 16:18:48
	2209	B1294CS		SDR	2207	NCCQueued	2002/291 16:19:40
2002/295 17:55:00	2330	B1294MS	TDS	SAR	0	Rejected	2002/291 18:35:47
2002/294 20:00:00	2458	B1294MS	TDE	SAR	0	Completed	2002/294 17:05:00
2002/294 20:05:00	2460	B1294MS	TDE	SAR	0	Completed	2002/294 17:46:27
2002/294 20:05:01	2463	B1294EE	TDE	SAR	0	Rejected	2002/294 18:20:43
2002/294 20:05:01	2464	B1294EE	TDE	SAR	0	Completed	2002/294 18:21:38
2002/294 21:00:00	2470	B1294EE	TDE	SAR	0	Completed	2002/294 18:39:03
2002/294 21:01:00	2472	B1294EE	TDE	SAR	0	Completed	2002/294 19:12:08

Figure 8-4. Schedule Request Summary Panel

The panel title shows the time at which the latest data was retrieved from the SWSI database, or will have no time tag if data is yet to be received. It should be understood that requests made after the time in the title will not be included in the display. To view the latest data, a *Reload* must be performed.

Requests are initially sorted by Start Time. Data can be resorted by clicking on any column header. The columns are initially ordered as shown in Figure 8-4. Columns can be re-ordered by dragging a column header with the mouse. Once re-ordered, the new order remains in effect until the window is closed. Requesting updated data with the *Reload* button does not change the column order.

All previously submitted schedule requests are displayed when the panel is first opened. Users can select to view only NCC or DAS requests, or switch back to viewing all requests by using the *View* radio button and selecting *NCC*, *DAS*, or *ALL*, respectively. This will filter the existing list of requests, but not display the latest data. Clicking the *Reload* button is required to retrieve the latest data.

The panel consists of the following items:

- Start Time – requested start time for the event.
- Request ID – unique identifier assigned by the SWSI server prior to transmission to NCC or DAS.

- SUPIDEN – Support Identifier. SIC is displayed instead of SUPIDEN for DAS requests.
- TDRS – TDRS name. For flexible scheduling this may be a TDRS set name consisting a group of actual TDRSs. NCCDS determines which actual TDRS is scheduled for the event.
- Msg Class – class of request message. The list of valid message classes is shown in Table 8-2.
- Ref. Req. ID – for ASARs, RRs, Schedule Delete Requests (SDRs), and Wait List Requests (WLRs), the Request ID of the original request that is being referred to.
- Status – status of the request. The list of valid Status values and their meanings is shown in Table 8-3.
- Creation Time – the date and time that the request was created by an authorized user.

Table 8-2. Message Class Values

Message Class	Description	System
SAR	Schedule Add Request	NCC
SDR	Schedule Delete Request	NCC
RR	Replace Request	NCC
ASAR	Alternate Schedule Add Request	NCC
WLR	Wait List Request	NCC
RAR	Resource Allocation Request	DAS
RADR	Resource Allocation Deletion Request	DAS
RAMR	Resource Allocation Modification Request	DAS
PBKR	Playback Request	DAS
PBKDR	Playback Deletion Request	DAS
PBKMR	Playback Modification Request	DAS

Table 8-3. Request Status Values

Status	Meaning
Saved	Request has been stored into the SWSI database.
Queued	Request has been queued for transmission to NCC or DAS.
Transmitted	Request has been transmitted to NCC or DAS.
Granted	Request has been granted (i.e., accepted into the active schedule)
Declined	NCC has declined request due to conflict.
Rejected	NCC has rejected request for some reason.
NCCQueued	Request has been queued by NCC and is waiting to be processed. If request submitted for forecast period, it will remain in queue until batch processing performed and schedule activated.
Waitlisted	Request has been placed on the NCC wait list.
Deleted	NCC, DAS, or an authorized SWSI user has deleted request.
Completed	NCC event has occurred and is complete.
Expired	NCC request start time has passed without the request being scheduled.
Pending	Request has been queued by DAS.
Invalid	NCC request has been rejected by SWSI server because of software error or SWSI database not being properly configured.

The buttons in the lower portion of the panel are enabled or disabled, depending upon which request is selected and what the status of the selected request is. The following button descriptions assume that the selected request enables the button.

8.6.1 Viewing a Request

To view the details of an individual request, select the request and click the *View* button. The appropriate panel will display the contents of the selected request. For request other than delete requests (SDR, RADR, or PBKDR), this panel will look similar to the panel that was used to create the request, but without the ability to edit or submit. Click the *Cancel* or *Close* button in the panel that displays the request to close that panel. For delete requests, the display panel shows request identification information, the request's status, and an explanation of any status codes. Figure 8-5 shows the panel for an SDR. Displays of RADRs and PBKDRs look similar.

For a view SDR, the Client application already has all the information needed to display to the user. For all other types of requests, the Client must first retrieve the request details from the SWSI database. A pop-up window appears with the title "Details Requested" and text indicating the ID of the request being retrieved. Once the details are received, the pop-up message is removed and the appropriate panel detailing the request is displayed. Similar Client behavior occurs for the *Clone*, *Generate Replace*, *Generate Alternate*, and *Generate Wait List* buttons.

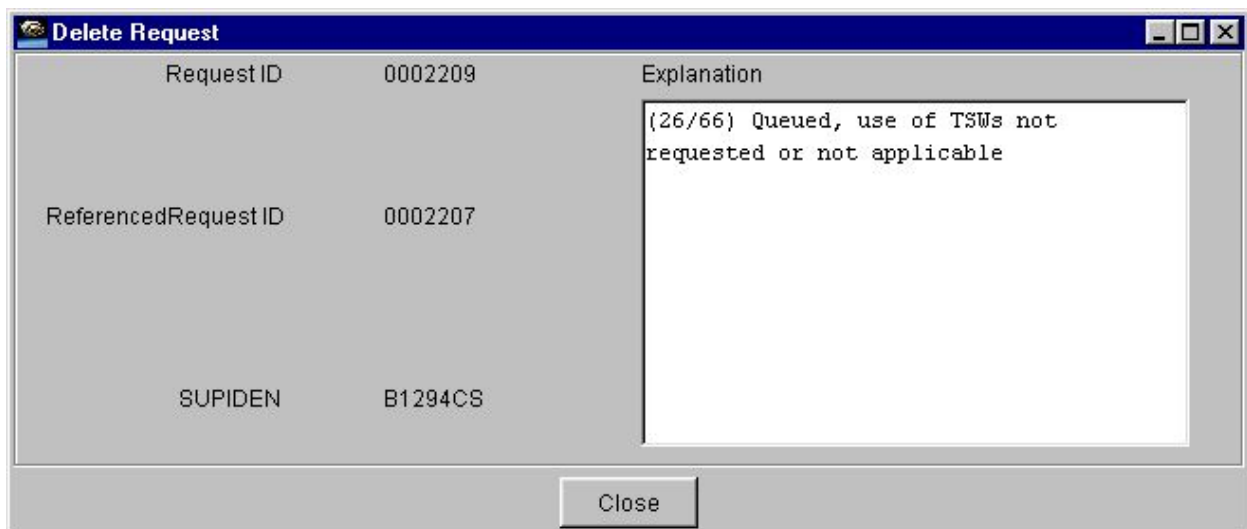


Figure 8-5. View Schedule Delete Request Panel

8.6.2 Deleting a Request

All requests other than SDR, WLR, RADR, or PBKDR may be deleted if the request status is Transmitted, Granted, NCCQueued, or Waitlisted. The user may delete a request by selecting the request and clicking the *Delete* button. A dialog box appears asking for confirmation of the delete

request. Clicking *Yes* causes a deletion request (SDR, RADR, or PBKDR) to be generated and transmitted to NCC or DAS, and a pop-up box saying “Deletion request sent” to be displayed.

For SDRs transmitted to NCC, the same types of alerts that appear for a SAR will also be generated for an SDR; i.e., the SDR was transmitted, an SRM was received, etc. If the SDR is “accepted”, an SRM will be received indicating that the referenced request is being deleted. However, the only SRM received for the SDR itself is one indicating that the SDR has been queued for processing (NCCQueued). The SDR therefore remains forever in an NCCQueued state from a SWSI standpoint, even though the SDR may have been successfully processed.

Deleting a request does not cause it to be removed from the Schedule Request Summary. When the SDR is accepted, the status of the deleted request is simply updated to *Deleted*.

8.6.3 Cloning a Request

SARs and RARs may be cloned by selecting the request and pressing the *Clone* button. The Client retrieves the request details and a SAR or RAR panel is displayed with those details prefilled. The user can then make any desired changes, such as to the Event Start Time, and submit the request as a new SAR or RAR. Note that care should be taken with the respecifiable parameter display for a cloned SAR. The *Clear* button on the parameter display will reset all the parameter values back to the SSC default values, and not the original SAR’s parameter values.

8.6.4 Replacing a Request

All requests other than SDR, WLR, RADR, and PBKDR may be replaced if the request status is Transmitted, Granted, NCCQueued, or Waitlisted. The user may replace a request by selecting the request and clicking the *Generate Replace* button. The Client retrieves the request details and displays the appropriate panel with the reference ID set to the selected request and the request details set to the referenced request’s details. The panel will look similar to the panel that was used to create the referenced request, but with a reference ID set. The user can then edit the details and submit the replace request.

For NCC RRs, if the RR is granted, then the RR inherits the message class and reference request ID of the request that it replaced. For example, an RR that replaced an SAR will show up in the Schedule Request Summary Panel as a SAR after it has been granted. An RR that replaced an ASAR will show up as an ASAR with the same reference request ID as the ASAR that it replaced.

8.6.5 Generating an Alternate SAR

SARs, RRs, and other ASARs with a status of NCCQueued may have an Alternate SAR generated against them. The user may generate an ASAR by selecting the request and clicking the *Generate Alternate* button. The Client retrieves the request details and displays a Create Alternate SAR Panel with the reference ID set to the selected request and the request details set to the reference request details. The user can then edit the details and submit the ASAR. If an ASAR is granted, then the

message class is changed by the SWSI server to SAR and it will appear as such in the Schedule Request Summary Panel.

8.6.6 Generating a Wait List Request

SARs that have been declined may be waitlisted. The user selects the request and clicks *Generate Wait List*. The panel shown in Figure 8-6 is displayed. The Referenced Request ID is automatically set to the Request ID of the referenced request. The user enters the Expiration Time. If this time is reached without successful scheduling of the request on the Wait List, the request is removed from the Wait List and an SRM is sent by NCC to indicate that the wait listing process did not result in an event being added to the schedule.

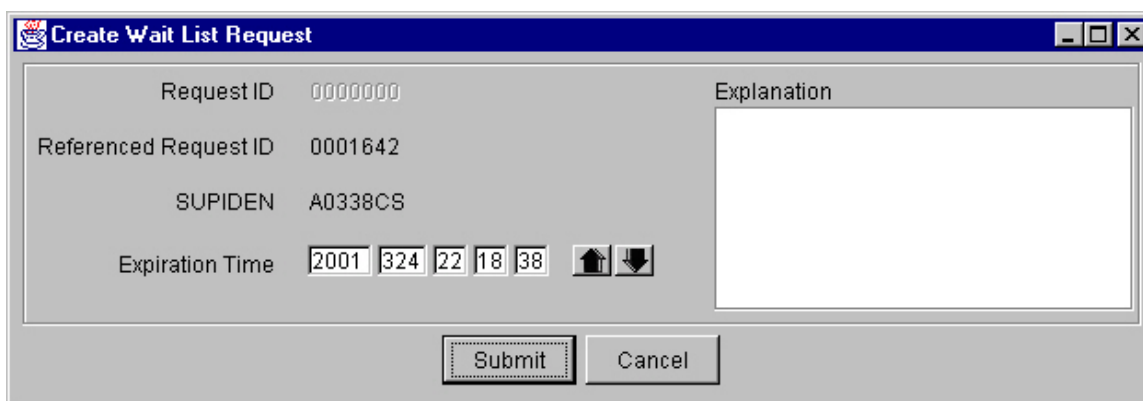


Figure 8-6. Create Wait List Request Panel

8.6.7 Resubmitting a Request

If a previously submitted request should be lost before it is received and processed by NCCDS, the Client application allows resubmission of the request with the same Request ID. The user selects the request and clicks *Resubmit*. A pop-up message will be displayed saying that the request was resubmitted.

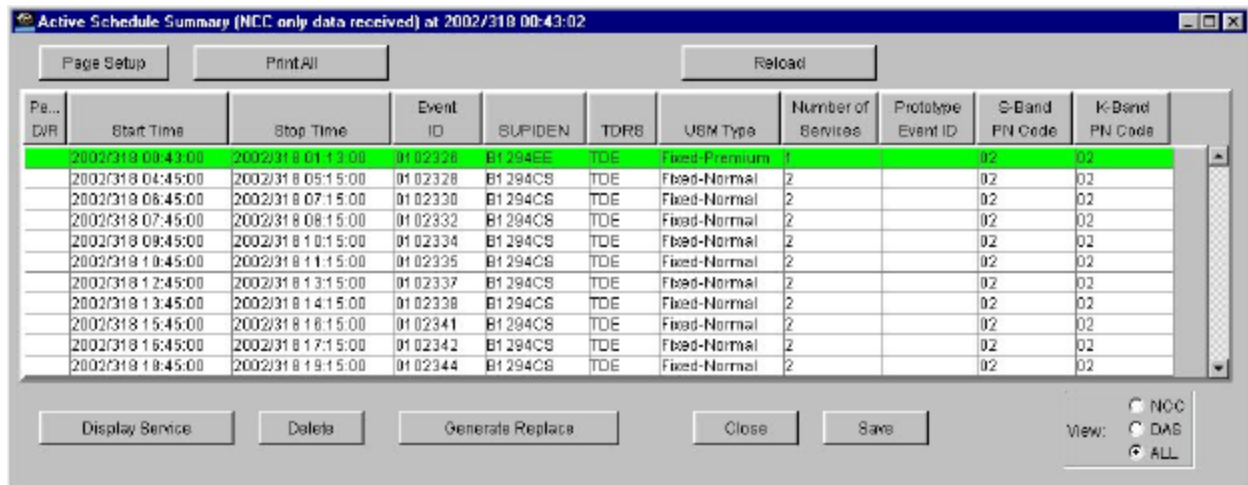
8.7 Active Schedule Summary

The Active Schedule Summary Panel displays all the requests accepted by NCC and/or DAS and scheduled to occur in the future for all SICs for which the user is authorized and has selected to be active for this session. The panel is shown in Figure 8-7. A summary of each event is shown in tabular form. The panel is displayed by selecting the Active Schedule Summary option in the Scheduling menu. The panel initially appears with the *Reload* button disabled and labeled *Data Requested*. Once the data is received from the server, the panel is updated to display the data and the *Reload* button is

enabled and labeled *Reload*. If the *Reload* button is pressed, it gets disabled and relabeled *Data Requested* until the latest data is received.

The panel title shows the time at which the latest data was retrieved from the SWSI database, or will have no time tag if data is yet to be received. It should be understood that requests made after the time in the title will not be included in the display. To view the latest data, a *Reload* must be performed.

Data for NCC and DAS events are sent separately from the SWSI server to the Client. The SWSI server maintains the schedule of NCC active events, while the schedule of DAS active events is maintained by and obtained from DAS. If only part of the data has been received, the title will include a comment to that effect. Users can select to view only NCC or DAS events, or switch back to viewing all events by using the *View* radio button and selecting *NCC*, *DAS*, or *ALL*, respectively. This will filter the existing list of events, but not display the latest data. Clicking the *Reload* button is required to retrieve the latest data.



Active Schedule Summary (NCC only data received) at 2002/318 00:43:02

Page Setup PrintAll Reload

Pend D/R	Start Time	Stop Time	Event ID	SUPIDEN	TDRS	USM Type	Number of Services	Prototype Event ID	G-Band PN Code	K-Band PN Code
	2002/318 00:43:00	2002/318 01:13:00	01 02328	B1 2948E	TDE	Fixed-Premium	1		02	02
	2002/318 04:45:00	2002/318 05:15:00	01 02328	B1 294C8	TDE	Fixed-Normal	2		02	02
	2002/318 06:45:00	2002/318 07:15:00	01 02330	B1 294C8	TDE	Fixed-Normal	2		02	02
	2002/318 07:45:00	2002/318 08:15:00	01 02332	B1 294C8	TDE	Fixed-Normal	2		02	02
	2002/318 09:45:00	2002/318 10:15:00	01 02334	B1 294C8	TDE	Fixed-Normal	2		02	02
	2002/318 10:45:00	2002/318 11:15:00	01 02335	B1 294C8	TDE	Fixed-Normal	2		02	02
	2002/318 12:45:00	2002/318 13:15:00	01 02337	B1 294C8	TDE	Fixed-Normal	2		02	02
	2002/318 13:45:00	2002/318 14:15:00	01 02338	B1 294C8	TDE	Fixed-Normal	2		02	02
	2002/318 15:45:00	2002/318 16:15:00	01 02341	B1 294C8	TDE	Fixed-Normal	2		02	02
	2002/318 16:45:00	2002/318 17:15:00	01 02342	B1 294C8	TDE	Fixed-Normal	2		02	02
	2002/318 18:45:00	2002/318 19:15:00	01 02344	B1 294C8	TDE	Fixed-Normal	2		02	02

Display Service Delete Generate Replace Close Save

View: ☐ NCC ☐ DAS ☒ ALL

Figure 8-7. Active Schedule Summary Panel

Events are initially sorted by Start Time. Data can be resorted by clicking on any column header. The columns are initially ordered as shown in Figure 8-7. Columns can be re-ordered by dragging a column header with the mouse. Once re-ordered, the new order remains in effect until the window is closed. Requesting updated data with the *Reload* button does not change the column order.

If an event is in progress, the background of that event is colored green. The *Generate Replace* button is disabled for ongoing events.

The panel consists of the following items:

- Pend D/R – indicates whether an NCC event is pending deletion or replacement. Pending means that an SDR or RR is either queued by SWSI for transmission to NCC, or has already

been transmitted by SWSI, but that a response has not yet been received from NCCDS. If an SDR or RR is pending, a “D” or “R” is displayed in this column.

- Start Time – start time for the event.
- Stop Time - stop time for the event.
- Event ID – used by NCC or DAS to uniquely identify the event. The Event ID is identical to the Request ID of the original request that was generated to request service. For events scheduled by an NCC operator, it is in the range 9,000,000 to 9,999,999. For events scheduled by a DAS operator, it is in the range 8,900,000 – 8,999,999.
- SUPIDEN – Support Identifier. SIC is displayed instead of SUPIDEN for DAS events.
- TDRS – TDRS name.
- USM Type – in NCC terminology, the type of User Schedule Message (USM) received from NCC that was used to describe the event. DAS does not generate USMs, but the DAS event type (DASMAR or DASPBK) is nonetheless listed in this column. The list of valid USM Types is shown in Table 8-4.
- Number of Services – number of services associated with this event.
- Prototype Event ID – for NCC events scheduled using a Prototype Event.
- S-Band PN Code – PN code assignment received from NCC only.
- K-Band PN Code - PN code assignment received from NCC only.

Table 8-4. USM Type Values

USM Type	Description
Fixed-Normal	NCC Normal Support, Fixed Schedule
Fixed-Premium	NCC Premium Support, Fixed Schedule
Fixed-Sim	NCC Simulation Support, Fixed Schedule
Flexible-Normal	NCC Normal Support, Flexible Schedule
Flexible-Sim	NCC Simulation Support, Flexible Schedule
DASMAR	DAS MAR Service
DASPBK	DAS Playback Event

For NCC services, the Flexible USMs differ from the Fixed USMs in that some of the parameter values have not been finalized. Which parameters are not finalized depends on what flexibility was specified in the original request. For example, if a TDRS set name was specified rather than an individual TDRS, then the actual TDRS that will be used to support the event may not be finalized. The same rule applies to the Single Access (SA) Antenna, User Interface Channel ID, Event Start Time, Service Start Times, and Service Stop Times. At the Freeze Time specified by the user, the NCCDS will finalize all these parameters and transmit a Fixed USM. Refer to Section 7 of the *NCCDS/MOC ICD* for further information on how to use flexible scheduling.

The buttons in the lower portion of the panel are enabled or disabled, depending upon which event is selected and whether that event has a pending SDR or RR, or if that event is ongoing. The following button descriptions assume that the selected event enables the button.

8.7.1 Displaying Event Service Details

To view the service details of an individual event, select the event and click the *Display Service* button. The panel shown in Figure 8-8 is displayed for events other than a DAS Playback Request (DASPBK). The columns are initially ordered as shown in Figure 8-8. Columns can be re-ordered by dragging a column header with the mouse.

The items displayed in the top portion of the panel are event-level details inherited from the Active Schedule Summary Panel. The remainder of the panel contains a list of services for the event with the following details:

- Service Type – type of service
- SSC – Service Specification Code used to schedule the service.
- Start Time – start time for the service.
- Stop Time – stop time for the service.
- Link ID – antenna number for Single Access (SA) service, or Link ID for Multiple Access Return (MAR) service.

Service Display at 2002/318 00:43:29

Supiden: B1294CS Event ID: 0102335

Start Time: 2002/318 10:45:00 TDRS: TDE

Stop Time: 2002/318 11:15:00 Prototype ID:

S-Band PN Code: 02

K-Band PN Code: 02

Service Type	SSC	Start Time	Stop Time	Link ID
SSAF	H01	2002/318 10:45:00	2002/318 11:15:00	2
SSAR	L02	2002/318 10:45:00	2002/318 11:15:00	2

Parameters... Generate GCMR View Transitions Close

Figure 8-8. Event Service Display

The following buttons allow specific actions to be performed on selected services:

- **Parameters** – view service parameter values. A panel similar to the Service Parameter panel shown in Figure 8-3 is displayed. Only one column will appear for the respecifiable parameters and editing of the parameter values will be disabled.
- **Generate GCMR** – enabled only for ongoing services. Selecting a service and clicking this button will cause a Ground Control Message Request (GCMR) menu to be displayed, allowing the user to reconfigure the service. The menu panel varies depending on whether the selected service is an NCC or a DAS MAR service. GCMRs may also be initiated through the User Performance Data (UPD) Summary Panel. GCMRs are described in detail in Section 10.
- **View Transitions - TBS**

8.7.2 Deleting an Event

Events may be deleted in the same way that schedule requests are deleted through the Schedule Request Summary Panel. Only events that are not already pending deletion or replacement may be deleted. Ongoing events may be deleted, resulting in early termination of service.

An event is deleted by selecting it and clicking the *Delete* button. A dialog box appears asking for confirmation of the delete request. Clicking *Yes* causes a deletion request (SDR, RADR, or PBKDR) to be generated and transmitted to NCC or DAS, and a pop-up box saying “Deletion request sent” to be displayed.

For SDRs transmitted to NCC, the same types of alerts that appear for an SDR that appear for an SDR generated via the Schedule Request Summary Panel; i.e., the SDR was transmitted, an SRM was received, etc. If the SDR is “accepted”, an SRM will be received indicating that the referenced event is being deleted. The original SAR that requested this event will appear in the Schedule Request Summary Panel with a status of *Deleted*. On the next *Reload* of the Active Schedule Summary Panel, the event will no longer be listed.

8.7.3 Replacing an Event

Events may be replaced in the same way that schedule requests are replaced through the Schedule Request Summary Panel. Only events that are not already pending deletion or replacement may be replaced. Ongoing events or events scheduled by the NCC operator may not be replaced.

An event is replaced by selecting it and clicking the *Generate Replace* button. The Client retrieves the associated request details and displays the appropriate panel with the reference ID set to the selected request and the request details set to the referenced request’s details. The panel will look similar to the panel that was used to create the referenced request, but with a reference ID set. The user can then edit the details and submit the replace request.

For events scheduled by an NCC operator, no details for the associated requests for these events will exist in the SWSI database. For these cases, the response to a *Generate Replace* will be a pop-up window with the following message:

*SWSI does not have any record of this request.
The reference request may have been submitted
directly through the NCC.
Please contact the NCC directly
to submit this Replace Request.*

8.7.4 Saving the Active Schedule to a File

The *Save* button allows the user to save the Active Schedule Summary to a Comma Separated Values (CSV) file. The data is written to the file in order of Event Start Time. The first line of the file is a header line, similar to the table header, documenting the order of the values in each subsequent line. The location of the output file is set by the user through a standard file chooser. Following is the contents of a sample output file:

```
Pending,start,stop,eventID,SUPIDEN,TDRS,usmType,numberOfServices,prototypeID,sBandPNc
ode,kBandPNcode
,1999/181 01:00:00,2002/340 15:42:11,0011820,A3782MS,TDW,Fixed-Normal,2, ,04,04
,2001/289 00:10:00,2002/340 15:42:11,0000073,B1419CS,TDW,Fixed-Normal,2, ,04,04
D,2001/289 01:11:11,2002/340 15:42:11,3794208,A0338EE,047,Fixed-Normal,1, ,4 ,4
```

This process is manual and only event-level details are provided when saving the active schedule to a file. An automated process also exists to save event-level details as well as service-level details and parameter values. This process is described in detail in Section 8.8.

8.8 Active Schedule File Storage

SWSI has the capability to automatically store a file containing all information for an Active Schedule, including service-level information and parameter values, in a text file on the Client workstation. When the user is logged in and the Client connected to the SWSI server, the Client will receive Active Schedule updates for all SICs for which the user is authorized and has selected to be active for that session. The parameters for this process, including how often the file is updated and what it should contain, are stored in the SWSI database. The initial settings for these parameters are established during the customer setup process described in Section 3.1 and are changed as needed by the SWSI DBA in coordination with the customer. Regardless of the parameter settings, the current Active Schedule is updated on the Client workstation whenever the user logs in.

The following properties in *log.prop* control Active Schedule file storage behavior:

- *asEnable* – defines whether the Active Schedules received automatically from the SWSI server are written to files.

- `asOutputPath` – directory where Active Schedule files received automatically from the SWSI server are stored. If `asEnable` is `false`, this property has no effect.

Active Schedule filenames are of the form:

`<MODE>_<SystemID>_<SIC>_asf.txt`

Where:

- `MODE` = OPS or EIF
- `SystemID` = NCC or DAS
- `SIC` = Support Identification Code

The `MODE` is the same mode, operations or test (EIF), selected at login time. Separate files are written for schedules received from NCC and DAS for each `SIC`.

The files are overwritten with each update. A cooperative file access protocol using a semaphore file is used to guard against problems caused when both the SWSI Client and a user application try to access the file at the same time. Before the SWSI Client writes the file, it tries to create a new “lock” file. The file naming is the same as for the active schedule file itself, except that the postfix “lock” is used. For example, the active schedule file `OPS_NCC_1294_asf.txt` has a lock file named `OPS_NCC_1294_asf.lock` associated with it. This lock file is written to the same directory that the active schedule file is written to. If a new lock file is successfully created, the SWSI Client writes the active schedule file. Once the file is written, the lock file is deleted. Any user application reading the active schedule files should do the same; i.e., check for and create a lock file before reading the active schedule file and deleting the lock file after completing the read. If the lock file already exists, the user application needs to wait until the lock file disappears.

Regarding a crashed SWSI Client or user application, the file lock written by the SWSI Client has as its contents the word “SWSI”. If the SWSI Client crashes, it is responsible for clearing the file lock when it is executed again. If the user application is reading the active schedule file, the word “USER” should be written to the lock file. If the user application crashes, the user is responsible for clearing the file lock when it is executed again.

The format of the Active Schedule file is described in detail in Appendix B for NCC events and in Appendix C for DAS events.

8.9 TDRS Scheduling Window (TSWs)

SWSI is unable to create TSWs, but has the capability of transmitting user-created TSW files to the NCC through the *TDRS Scheduling Window (TSW)* menu option under the *NCC* submenu under the *Scheduling* menu. A standard file chooser is displayed, allowing the user to browse directories and select the TSW file to be transmitted. A user is only allowed to submit TSWs for SICs for which the

user is authorized and has selected to be active for this session. If an attempt is made to send a TSW for some other SIC, the error dialog shown in Figure 8-9 is displayed.

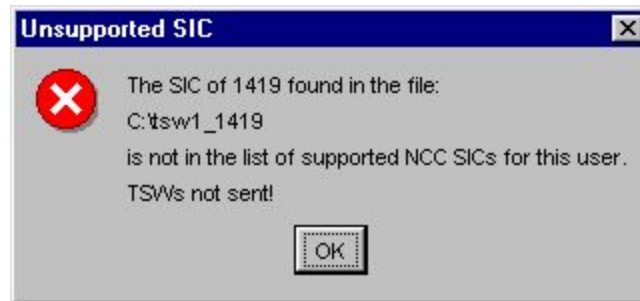


Figure 8-9. TSW Unsupported SIC Dialog

Once a valid file has been selected, the confirmation dialog box shown in Figure 8-10 is displayed. Information from the file, including SIC, TSW Set ID, and Timespan, allows the user to verify that this is the correct file to send. If the information is correct, the user clicks *OK* and the file is sent to the SWSI server for transmission. The dialog box shown in Figure 8-11 appears when this is complete.

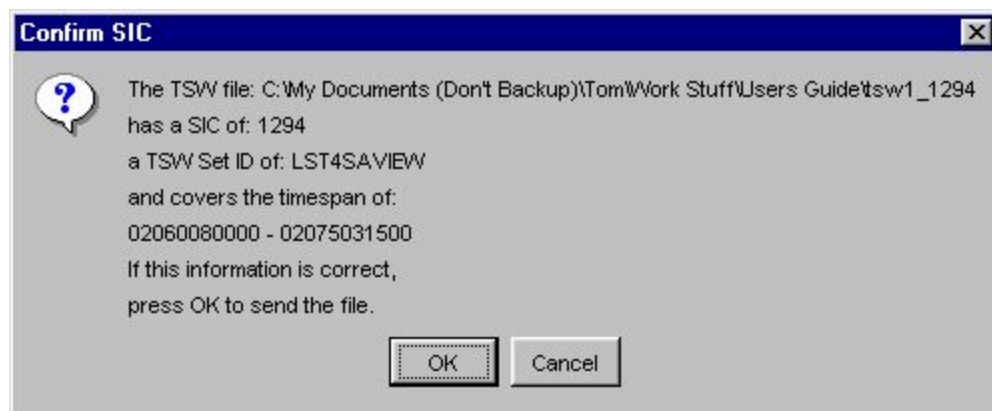


Figure 8-10. TSW File Confirmation Dialog



Figure 8-11. TSW File Sent Dialog

If transmission of the TSW to NCC is successful, a green Information alert is received, similar to the following:

TSW File TS12942002335_193814, SUPIDEN B1294MS, TDRS TDW, Set ID LST4SAVIEW transmitted to NCC

The TSW filename is a SWSI server-generated name based on the date and time of file creation and the SIC and has no relation to the name of the file selected by the user. No response is received from the NCC acknowledging receipt of the TSW, as is the case with an SRM for a Schedule Request.

If the SWSI server is unable to connect to the NCC to transmit the message, a yellow Warning alert is received, similar to the following:

Unable to connect to NCC, will attempt later to send TSW File TS12942002335_193814, SUPIDEN B1294MS, TDRS TDW, Set ID LST4SAVIEW

The TSW file should follow the same format as the TSW message described in Table 7-12 of the *NCCDS/MOC ICD*, with the exception of the following items:

- Message ID (item 2) – automatically generated by the SWSI server.
- User ID (item 5) – stored in the SWSI database and automatically inserted into the message by the SWSI server.
- Password (item 6) – stored in the SWSI database and automatically inserted into the message by the SWSI server.

These items may be left blank in the TSW file provided to the SWSI Client.

The TSW undergoes validation checks before transmission to NCC. A yellow Warning alert is received if the validation check fails, with an alert message stating “TSW File Invalid” and a reason for failure. Table 8-5 lists the alert messages received due to an invalid TSW.

Table 8-5. Invalid TSW Alerts

Error Alert Message	Explanation
TSW File xxxx invalid: file too large (max size 8600 bytes)	The maximum allowed size for a TSW file has been exceeded.
TSW File xxxx invalid: invalid size	The file size is less than the minimum size. There isn't even enough data for a header (items 1-11).
TSW File xxxx invalid: invalid message type	The Message Type (item 1) should be “99”.
TSW File xxxx invalid: invalid message class	The Message Class (item 3) should be “25”.
TSW File xxxx invalid: invalid Timespan Start	The Timespan Start (Item 9) is not a valid format (YYDDHHMMSS).
TSW File xxxx invalid: invalid Timespan End	The Timespan End (Item 10) is not a valid format (YYDDHHMMSS).
TSW File xxxx invalid: TSW count/message length mismatch	The file is not the correct length based on the Number of TSWs (item 11).

8.10 Printing

Options are available for the user to print either the Schedule Request Summary or the Active Schedule. This can be done using either the *Print* submenu under the *Scheduling* menu, or by clicking the *Print All* button in the respective summary panel. When the print request is submitted by either method, the Client sends a print request to the SWSI server and the dialog shown in Figure 8-12 appears. After the server responds with the results, a platform-dependent print dialog will appear to allow the user to print the results.



Figure 8-12. Print Details Requested Dialog

Section 9. Performance Data Monitoring

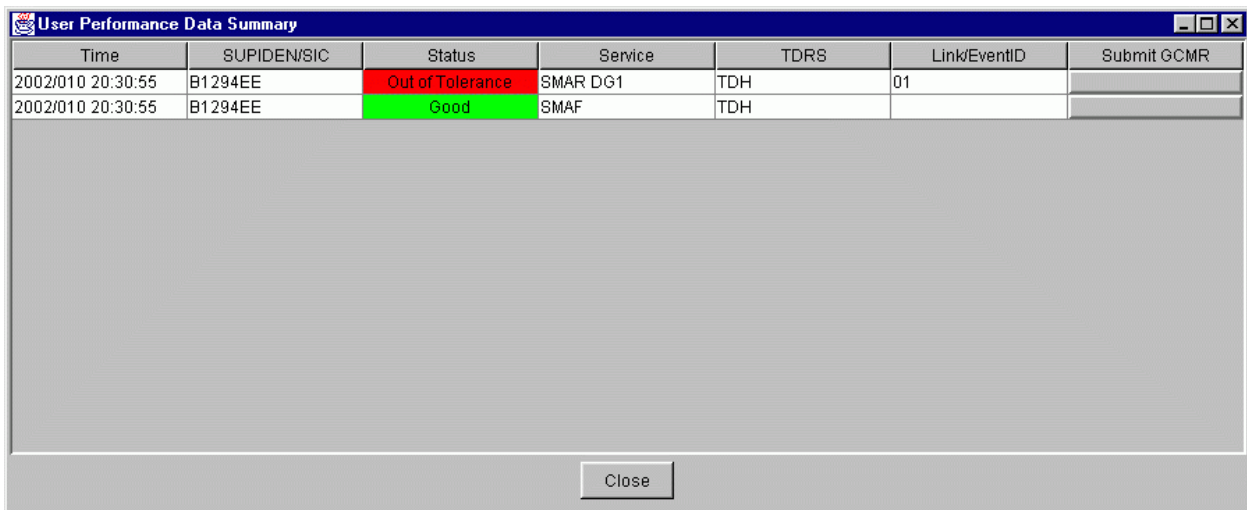
9.1 Introduction

Performance data encompasses all real-time messages sent by NCCDS to SWSI during an ongoing event, including User Performance Data (UPD) messages, Return Channel Time Delay (RCTD) measurements, Time Transfer Messages (TTM), and Acquisition Failure Notification (AFN). These messages are generated from within the NCCDS by the Communications and Control Segment (CCS).

CCS allows customers to selectively enable and disable performance data transmission. SWSI configures its interface with CCS such that performance data is always enabled for all missions that it supports. Whether a SWSI user actually sees the data is dependent on whether the appropriate UPD panels using the Client software are opened. There is a condition that may occur in the communication between SWSI and CCS where performance data may not be transmitted even though an event may be ongoing. In this case, the user will need to contact NCCDS operations personnel at the DSMC to ensure that the site associated with their mission has been configured as “up” on CCS.

9.2 User Performance Data Summary

The UPD Summary Panel provides a summary of all ongoing services for which UPD messages are being received for all SICs for which the user is authorized and has selected to be active for this session. A sample panel is shown in Figure 9-1. The panel is displayed by selecting the UPDs menu option in the Control/Monitor menu.



Time	SUPIDEN/SIC	Status	Service	TDRS	Link/EventID	Submit GCMR
2002/010 20:30:55	B1294EE	Out of Tolerance	SMAR DG1	TDH	01	
2002/010 20:30:55	B1294EE	Good	SMAF	TDH		

Figure 9-1. UPD Summary Panel

A summary of each UPD stream is shown in tabular form. Each stream is uniquely identified by TDRS, Link ID, and UPD service type (is this accurate?). The listing is dynamic, with streams appearing and disappearing as new UPD types are received and existing types disappear. The following properties from *log.prop* specify the timeout values that are used to control this behavior:

- UPDPrimaryExpirationTime – time in seconds by which another UPD must arrive after which a stream is flagged as expired. Set to 10 seconds in Client distribution.
- UPDSecundaryExpirationTime – time in seconds by which another UPD must arrive after which a service is removed from the list of active streams in the UPD Summary Frame. Set to 30 seconds in Client distribution.

The panel consists of the following items:

- Time – time tag from UPD message.
- SUPIDEN/SIC – Support Identifier. SIC is displayed instead of SUPIDEN for DAS services.
- Status – overall status for the service. This is also a button that, when clicked, opens a UPD Detail panel as described in Section 9.3. The status button is labeled with the maximum severity of UPD detail data as determined by limit checks performed on the data from the UPD detail panel. This button also provides an indication of the status of the incoming data. A listing of possible color-coded status values is given in Table 9-1.
- Service – UPD service type. A list of valid types is shown in Table 9-2. These types are derived from the UPD service types described in detail in Section 8 of the *NCCDS/MOC ICD*. Each type also contains data from the associated header packets. Separate UPD service types are provided for the various Data Group (DG) configurations. Optional Data Quality Monitoring (DQM) data is included with the appropriate return service packet.
- TDRS – TDRS name.
- Link/EventID – antenna or Link ID for NCC services, Event ID for DAS services.
- GCMR – for services for which this is possible, this is a button that causes a Ground Control Message Request (GCMR) menu to be displayed, allowing the user to reconfigure the service. The menu panel varies depending on whether the selected service is an NCC or a DAS MAR service. GCMRs may also be initiated through the Active Schedule Event Service Display. GCMRs are described in detail in Section 10.

Table 9-1. UPD Service Status Values

Color	Label	Explanation
-------	-------	-------------

Green	Good	UPDs are active. No limit-checked parameter failed.
Yellow	Warning	UPDs are active. At least one limit-checked parameter is at the warning level. No limit-checked parameters are worse than the warning level.
Red	Out of Tolerance	UPDs are active. At least one limit-checked parameter is out of tolerance.
Red	Invalid Data	An invalid value was received for at least one parameter. This usually indicates an NCCDS or SWSI software error. DSMC operations or SWSI development support should be notified.
Gray with Green Striped Border	One Chnl Bad	UPDs are active. The parameters for one return channel (I or Q) passed validation while the other channel failed.
Gray	UPD's Ended	UPDs are not active. Timeout expired without updates for this service.
Gray with Red Striped Border	Stale Data	Stale data was received from NCCDS. The data is a repeat of data received in a previous UPD.

Table 9-2. UPD Service Types

UPD Type	Associated Service Type
MAF	MAF
SMAF	SMAF
SSAF	SSAF
KSAF	KSAF
KaSAF	KASAF
MAR	MAR
SMAR DG1	SMAR
SMAR DG2	SMAR
SSAR DG1	SSAR
SSAR DG2	SSAR
KSAR DG1	KSAR
KSAR DG2	KSAR
KaSAR DG2	KASAR
KaSARWB DG2	KASARWB
EETF	EETF
EETR	EETR
DASMAR	DASMAR

9.3 UPD Details

The UPD Detail Panel is used to display the values of all UPD parameters for a given service. A separate panel is created for each UPD stream. The panels are displayed by clicking the associated service button on the UPD Summary Panel. A sample panel is shown in Figure 9-2.



Figure 9-2. UPD Detail Panel

The UPD Detail Panel consists of a title, menu bar, header panel, and body panel. The title gives the UPD service name and the current layout name. The header panel provides additional information about the service, including TDRS ID, SIC, scheduled service start time (where does this come from?), time tag from the latest UPD received (is this right?), antenna or link number, and the current UPD status in color (green Active or red Ended).

The body panel at the bottom shows the values for each parameter. Parameter value limit checking is supported, with values displayed according to color codes described in Table 9-3. Validation results are also used in determining the service status in the UPD Summary Panel as described in Table 9-1.

Table 9-3. UPD Detail Item Coding

Data Color	Description
Black	Label (static)
Blue	Non-limit checked parameter value
Green	Limit-checked parameter value, data in good range
Yellow	Limit-checked parameter value, data in marginal range
Red	Limit-checked parameter value, data is out of tolerance or invalid

The UPD Detail Panel supports customization of panel layout. On initial Client installation, all detail panels are displayed using a standard layout as indicated in the panel title. This layout describes a default layout describing which parameters are displayed and what limit checking is performed. Editing of the panel layouts is outside the scope of this document. The standard layouts are described in

Appendix D. The following subsections describing menu options for the detail panel excludes those options having to do with layout editing and selection.

9.3.1 Window Print Menu Option

The Window Print menu option from the File menu is used to print the current window contents. More detail?

9.3.2 Window Snapshot Menu Option

The Window Snapshot menu option from the File menu is used to save an image showing the current window contents to a file. More detail?

9.3.3 Close Menu Option

The Close menu option from the File menu closes the current window.

9.3.4 Pause Menu Option

The Pause menu option from the Execution menu is used to temporarily halt data updates to the detail panel. When Pause mode is selected, a check mark appears to the left of the Pause option in the Execution menu. Selecting the Pause option again resumes data updates. In Pause mode, summary status is not computed and the status shown in the UPD Summary Panel is not updated. Try this out?

9.3.5 Update Menu Option

The Update menu option from the Execution menu is used to display the most current data while in Pause mode. However, the corresponding summary status in the UPD Summary Panel is not updated. The panel still remains in Pause mode after selection of the Update option. Try out?

9.4 UPD Logging

The UPD logging menu option from the Control/Monitor menu controls whether or not UPD data received from NCCDS and DAS is logged to a file on the Client workstation. The following properties in *log.prop* control UPD logging behavior:

- UPDLogging – defines whether UPD message logging is enabled at Client startup.
- UPDLogDir – directory where UPD messages received from NCCDS or DAS are written to.
- UPDArchiveDir – directory to which archived (old) UPD messages are moved.
- UPDMaxLogSize – maximum UPD log file size in bytes. When the UPD log file reaches this size, the current UPD log file is closed and a new UPD log file is started.

UPD log files are of the form:

SIC_<SIC>_at_YYYY_DDD_HHMMSS.upd

Where:

- SIC = Support Identification code.
- YYYY_DDD_HHMMSS = timetag from first UPD in file.

Separate files are created for each SIC for which the user is authorized and selected to be active for this session. UPDs for all services associated with a given SIC are stored in the same file. File rollover occurs either when the *UPDMaxLogSize* is reached or when any one of the UPD streams being stored ends as defined by *UPDSecundaryExpirationTime* and disappears from the UPD Summary Panel (is this correct?).

The format of the UPD log file is described in detail in Appendix E.

9.5 Return Channel Time Delay Message

NCCDS Return Channel Time Delay (RCTD) Measurement messages are automatically stored in a file on the client workstation when they are received. The location of the file is defined by the *rctdOutputPath* property in *log.prop*. RCTD files are of the form:

<MODE>_<SIC>_YYYY_DDD_HHMMSS.rctd

Where:

- MODE = OPS or EIF
- SIC = Support Identification code.
- YYYY_DDD_HHMMSS = time that message was received.

At time of receipt, a green Information alert similar to the following is also displayed:

RCTDM Received, SUPIDEN B1294EE, TDE SSAR1

The message is stored in binary in the same format as described in Table 8-16 of the *NCCDS/MOC ICD*.

9.6 Time Transfer Message

NCCDS Time Transfer Messages (TTMs) are automatically stored in a file on the client workstation when they are received. The location of the file is defined by the *ttmOutputPath* property in *log.prop*. TTM files are of the form:

<MODE>_<SIC>_YYYY_DDD_HHMMSS.ttm

Where:

- MODE = OPS or EIF
- SIC = Support Identification code.
- YYYY_DDD_HHMMSS = time that message was received.

At time of receipt, a green Information alert similar to the following is also displayed:

TTM Received, SUPIDEN B1294EE, TDE SSAR1

The message is stored in binary in the same format as described in Table 8-18 of the *NCCDS/MOC ICD*.

9.7 Acquisition Failure Notification

Acquisition Failure Notification (AFN) messages received from the NCCDS result in a yellow Warning alert being displayed, similar to the following:

Acquisition Failure, SUPIDEN D8603WD, 275 SSAR1

Section 10. Service Reconfiguration

The panel shown in Figure 10-1 is the Ground Control Message Request (GCMR) menu panel for reconfiguring ongoing NCCDS services. This panel is displayed either through the Event Service Display described in Section 8.7.1 or through the UPD Summary Panel described in Section 9.2.

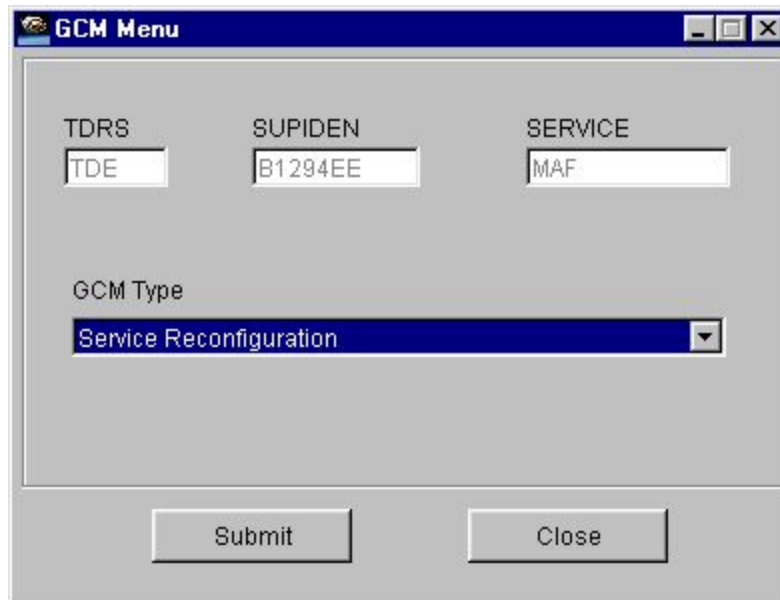
The image shows a software window titled "GCM Menu". It contains three text input fields at the top: "TDRS" with the value "TDE", "SUPIDEN" with the value "B1294EE", and "SERVICE" with the value "MAF". Below these fields is a dropdown menu labeled "GCM Type" which currently displays "Service Reconfiguration". At the bottom of the window are two buttons: "Submit" and "Close".

Figure 10-1. GCM Menu Panel

The following selections are provided in the GCM Type menu:

- Service Reconfiguration
- User Reacquisition Request
- Forward Link Sweep Request
- Forward Link EIRP Reconfiguration – Normal Power
- Forward Link EIRP Reconfiguration – High Power
- Expanded User Frequency Uncertainty Request
- Doppler Compensation Inhibit Request

With the exception of the Service Reconfiguration, selecting any one of these possible options and clicking *Submit* causes the request to immediately be sent to the SWSI server. In cases where a GCMR is submitted which is not appropriate for a given service, an error alert dialog box similar to that shown in Figure 10-2 is displayed.



Figure 10-2. Invalid GCMR Error Dialog

Selection of Service Reconfiguration Request causes a Reconfigurable Parameters Panel similar to that shown in Figure 10-3 to appear. This panel is similar to the Service Parameter Panel discussed in Section 8, except that it displays the current reconfigurable parameter values for that ongoing service. The values in the left column reflect the initial values assigned when the service was scheduled, plus any changes that have occurred with subsequent reconfigurations. Changes are made by editing the values in the right column. Clicking the *Submit* button causes the message dialog in Figure 10-4 to appear and for the request to be sent to the SWSI server.

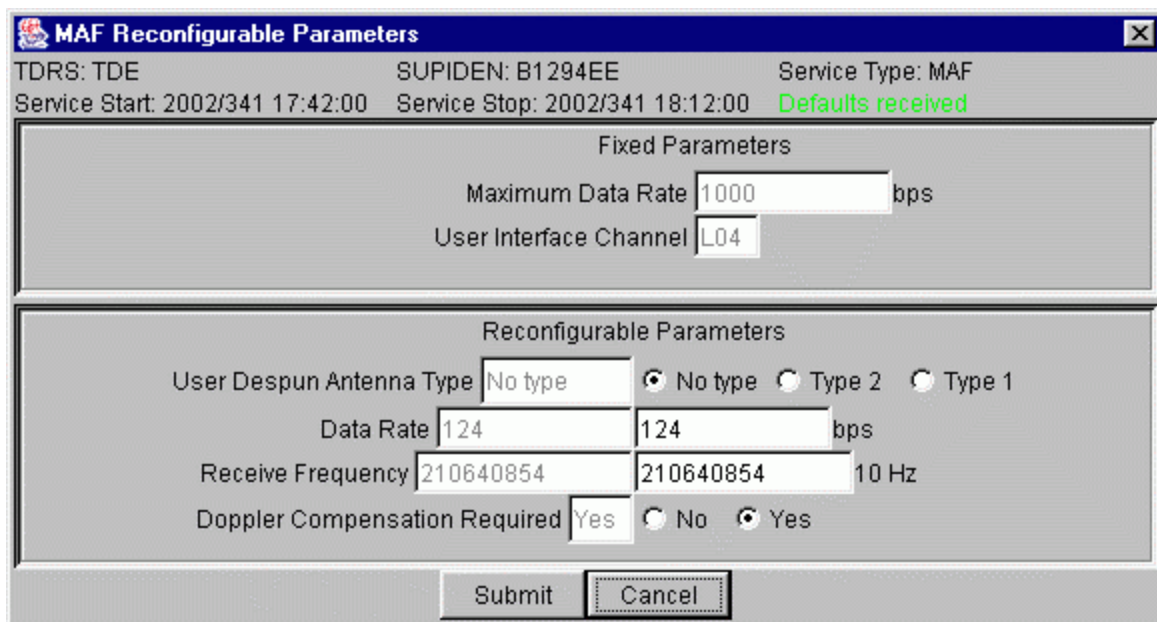


Figure 10-3. Reconfigurable Parameters Panel



Figure 10-4. GCMR Message Sent Dialog

Once any GCMR is sent to the server, a unique Request ID is assigned and the message is formatted for transmission to the NCCDS. Alerts are generated by the server for each step in the message exchange that results in the request either being accepted or rejected. The Alert Message Panel may be used to monitor the progress of this exchange.

Following is a typical sequence of events for a successfully submitted GCMR:

1. The GCMR is transmitted to the NCC.
2. The NCC responds with a GCM Disposition message indicating whether or not the message was successfully acknowledged by the White Sands Complex (WSC).
3. The NCC responds with a GCM Status message indicating whether the GCMR was accepted or rejected. If rejected, a reason for rejection is given as defined by the reject codes in Table 8-13 of the *NCCDS/MOC ICD*.

Following is a typical set of alerts for the case where a GCMR is successfully processed:

Reacq Req ID #0003581, SUPIDEN D8603WD, 171 SSAF1 transmitted to ANCC
 GCM Disposition received for Reacq Req ID #3581, SUPIDEN D8603WD, ACK'd at 02/303 19:34:42
 GCM Status received for Reacq Req ID #3581, SUPIDEN D8603WD: Accepted

In this case, since the request was successful, all the alerts are of green (Information) severity. Following is a case where a request is rejected:

Fwd Link EIRP Reconfig Req ID #0104220, SUPIDEN B1294EE, TDE MAF transmitted to ANCC
 GCM Status received for Fwd Link EIRP Reconfig Req ID #0104220, SUPIDEN B1294EE: Rejected (28), GCM class inappropriate to service type or configuration

The GCM Status alert is of yellow (Warning) severity to indicate that there was a problem with the request such that it was rejected. Note also that since the GCMR was rejected prior to transmission to WSC, no GCM Disposition message was received. For GCMRs rejected by WSC, a GCM Disposition alert will be displayed.

Listed in Table 10-1 are alerts indicating that a problem occurred in transmitting a GCMR outside of a normal rejection by NCCDS.

Table 10-1. GCMR Error Alerts

Error Alert Message	Severity	Explanation
Error transmitting <GCMR_Type> ID #xxxxxxx, SUPIDEN xxxxxxx, <TDRS> <Service> to NCC, dropping message	Red	There was an error in transmitting the message to NCCDS. The message is being dropped and will need to be resubmitted.
Unable to connect to NCC, dropping <GCMR_Type> ID #xxxxxxx, SUPIDEN xxxxxxx, <TDRS> <Service>	Red	There was a problem connecting to the NCCDS. The message is being dropped and will need to be resubmitted. DSMC operations personnel should be notified of the error, as it indicates either an operations or a database problem.
GCMR ID #xxxxxxx invalid: Realtime Connection entry not found	Red	The SWSI database has not been properly configured for the SIC. The message is dropped. The SWSI DBA at DSMC should be contacted to correct the error.
GCMR ID #xxxxxxx invalid: <reason for invalid request>	Red	The GCMR is not properly formatted and will be dropped. This error should not occur and is an indication of a SWSI software error. SWSI development support should be notified.

Section 11. State Vectors

11.1 Title

yada yada yada yada

11.2 Title

yada yada yada yada

11.3 Title

yada yada yada yada

11.4 Title

yada yada yada yada

11.5 Title

yada yada yada yada

11.6 Title

yada yada yada yada

11.7 Title

yada yada yada yada

11.8 Title

yada yada yada yada

11.9 Title

yada yada yada yada

11.10 Title

yada yada yada yada

Section 12. SSC Administration

Users with mission manager privilege may edit the default SSC parameter values that are displayed in a schedule request (SAR, ASAR, RR, RAR, or RAMR) respecifiable parameters panel. For NCC requests, these values are used only for reference when respecifying parameters and don't necessarily need to be accurate, especially if no requests will be submitted with these values respecified. If NCC requests will be submitted with respecified parameters, then it is important that the default values in the SWSI database match those in the NCCDS database. Changes should therefore always be coordinated with the NCCDS DBA.

For DAS requests, the default values represent the actual values sent in a RAR or RAMR and must be accurate. Coordination with the DAS DBA is not required.

The process of adding or removing SSCs is strictly a SWSI DBA function that cannot be performed by a SWSI user. After the SWSI DBA adds a new code in coordination with the customer, a user with appropriate privilege may then edit the default parameter values. Note that new codes will not appear to the user until the first login session after the new code is added. SSC editing is initiated by selecting the Edit SSCs option in the Admin menu. This causes the menu panel shown in Figure 12-1 to appear. The SIC must be selected first, then the SSC may be selected from the list of SSCs for that SIC. Clicking the *Edit* button causes an Edit SSC Parameters Panel similar to that shown in Figure 12-2 to appear.

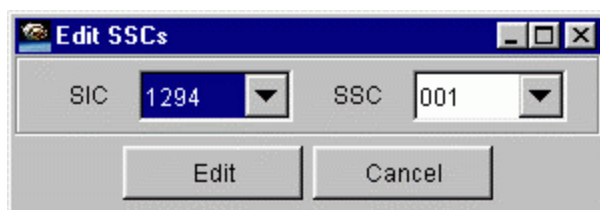


Figure 12-1. Edit SSCs Menu Panel

Parameter defaults for SSC A01

SIC 1294 SSC A01 Type MAF Defaults received

Fixed Parameters

Maximum Data Rate 1000 1000 bps

User Interface Channel

Respecifiable Parameters

TSW Set ID

User Despun Antenna Type No type ☒ No type ☐ Type 2 ☐ Type 1

Data Rate 125 125 bps

Receive Frequency 210640419 210640419 10 Hz

Doppler Compensation Required Yes ☐ No ☒ Yes

Save Clear Cancel

Figure 12-2. Edit SSCs Parameters Panel

This panel is similar to the Service Parameter Panel discussed in Section 8, except that values for all parameters, including fixed, may be edited. The values in the left column reflect the current default values stored in the database. For newly adding SSCs, these values are all blank. Changes are made by editing the values in the right column. Clicking the *Save* button causes the modification request to be sent to the SWSI server.

If an error should occur in saving the new values, a yellow (Warning) alert similar to the following is displayed:

Error editing SSC B02 for SIC 1294, change not saved

This indicates a database or software problem on the SWSI server that should be resolved through the SWSI DBA.

Appendix A. Alert Messages

A.1 General

This appendix lists all the possible messages that can be displayed in the Alert Message panel. The messages are listed in separate tables for each possible source of the alert. Because of the number of SWSI-NCCDS Interface alerts, these alerts are further categorized by general message type (scheduling, GCMR, etc).

Table A-1. Client Alert Messages

Alert Message	Severity	Explanation
The following socket error occurred: <java_exception_text>	Yellow	An error occurred with the TCP connection with the server.
Automatic reconnect to server was successful.	Green	Reconnection to server after a connection loss was successful.
Automatic reconnect to server failed.	Yellow	Reconnection to server after a connection loss failed.
Vector alerts? Source internal?		

Table A-2. Isolator Alert Messages

Alert Message	Severity	Explanation
Error editing SSC xxx for SIC xxxx, change not saved	Yellow	A server error occurred while trying to save parameter values for an SSC being edited. The SWSI DBA should be contacted.
Error editing SSC xxx for SIC xxxx, unlock failed	Yellow	A server error occurred while trying to save parameter values for an SSC being edited. The SWSI DBA or DSMC operations should be contacted.
Event #xxxxxxx, SUPIDEN xxxxxxx, <TDRS> starts at YYYY/DDD HH:MM:SS	Green	An event is scheduled to begin within the next 5 minutes.
Event #xxxxxxx, SUPIDEN xxxxxxx, <TDRS> ends at YYYY/DDD HH:MM:SS	Green	An event is scheduled to begin within the next 5 minutes.
<mode> SNIF is not responding	Yellow	SNIF did not respond to a request sent to it by the Isolator. <mode> is OPS or EIF.
Isolator/<mode> SNIF Communications Inactive	Yellow	Communications between Isolator and SNIF has been lost. <mode> is OPS or EIF.
Isolator/<mode> SNIF Communications Active	Green	Communications between Isolator and SNIF has been restore. <mode> is OPS or EIF.

Table A-3. SNIF Scheduling Alert Messages

Alert Message	Severity	Explanation
SAR ID #xxxxxxx, SUPIDEN xxxxxxx transmitted to NCC	Green	SAR successfully transmitted to NCC.

ASAR ID #xxxxxxx, Ref #xxxxxxx, SUPIDEN xxxxxx transmitted to NCC	Green	ASAR, SDR, RR, or WLR successfully transmitted to NCC.
Error transmitting SAR ID #xxxxxxx, SUPIDEN xxxxxx to NCC, will retry later	Yellow	There was an error in transmitting the SAR to NCCDS. The message is saved and transmission will be attempted later. Another alert will be displayed when transmission is successful.
Error transmitting ASAR ID #xxxxxxx, Ref #xxxxxxx, SUPIDEN xxxxxx to NCC, will retry later	Yellow	There was an error in transmitting the ASAR, SDR, RR, or WLR to NCCDS. The message is saved and transmission will be attempted later. Another alert will be displayed when transmission is successful.
Unable to connect to NCC, will attempt later to send SAR ID #xxxxxxx, SUPIDEN xxxxxx	Yellow	There was a problem connecting to the NCCDS. The SAR is saved and transmission will be attempted later. Another alert will be displayed when transmission is successful.
Unable to connect to NCC, will attempt later to send ASAR ID #xxxxxxx, Ref #xxxxxxx, SUPIDEN xxxxxx	Yellow	There was a problem connecting to the NCCDS. The ASAR, SDR, RR, or WLR is saved and transmission will be attempted later. Another alert will be displayed when transmission is successful.
Schedule Request ID #xxxxxxx invalid: Unable to find Schedule Connection entry for SIC	Red	The SWSI database has not been properly configured for the SIC. The message is dropped. The SWSI DBA at DSMC should be contacted to correct the error.
Schedule Request ID #xxxxxxx invalid: <reason for invalid request>	Red	The Schedule Request is not properly formatted and will be dropped. This error should not occur and is an indication of a SWSI software error. SWSI development support should be notified.
SRM received for SAR ID #xxxxxxx, SUPIDEN xxxxxx: <result explanation>	Green Yellow	Schedule Result Message (SRM) received from NCCDS. Severity depends on whether granted, rejected, declined, etc.
<USM_Type> received for Event ID #xxxxxxx, SUPIDEN xxxxxx, <TDRS>, Start Time YY/DDD HH:MM:SS	Green	User Schedule Message (USM) received from NCCDS for event successfully scheduled.
Error processing USM ID #xxxxxxx: <explanation of error>	Red	A USM received from NCCDS was improperly formatted, or for some other reason could not be stored in the SWSI Active Schedule. The SWSI DBA or DSMC operations should be contacted.
Error processing SRM ID #xxxxxxx: <explanation of error>	Red	An SRM received from NCCDS was improperly formatted. DSMC operations should be contacted.
Error processing Schedule Result ID #xxxxxxx: <explanation of error>	Red	A schedule result received from NCCDS was improperly formatted. DSMC operations should be contacted.

Table A-4. SNIF GCMR Alert Messages

Alert Message	Severity	Explanation
<GCMR_Type> ID #xxxxxxx, SUPIDEN xxxxxx, <TDRS> <Service> transmitted to NCC	Green	GCMR successfully transmitted to NCC.
Error transmitting <GCMR_Type> ID #xxxxxxx, SUPIDEN xxxxxx, <TDRS> <Service> to NCC, dropping message	Red	There was an error in transmitting the GCMR to NCCDS. The message is being dropped and will need to be resubmitted.
Unable to connect to NCC, dropping <GCMR_Type> ID #xxxxxxx, SUPIDEN xxxxxx, <TDRS> <Service>	Red	There was a problem connecting to the NCCDS. The GCMR is being dropped and will need to be resubmitted. DSMC operations personnel should be notified of the error, as it indicates either an operations or a database problem.

GCMR ID #xxxxxxx invalid: Realtime Connection entry not found	Red	The SWSI database has not been properly configured for the SIC. The message is dropped. The SWSI DBA at DSMC should be contacted to correct the error.
GCMR ID #xxxxxxx invalid: <reason for invalid request>	Red	The GCMR is not properly formatted and will be dropped. This error should not occur and is an indication of a SWSI software error. SWSI development support should be notified.
GCM Disposition received for <GCMR_Type> ID #xxxxxxx, SUPIDEN xxxxxxx, ACK'd at YY/DDD HH:MM:SS	Green	GCM disposition message received from NCCDS, indicating that GCMR was acknowledged by WSC.
GCM Disposition received for <GCMR_Type> ID #xxxxxxx, SUPIDEN xxxxxxx, No ACK received.	Yellow	GCM disposition message received from NCCDS, indicating that GCMR was not acknowledged by WSC.
GCM Status received for <GCMR_Type> # xxxxxxx, SUPIDEN xxxxxxx: Accepted	Green	GCM status message received from NCCDS indicating GCMR was accepted
GCM Status received for <GCMR_Type> # xxxxxxx, SUPIDEN xxxxxxx: Rejected (<reject code>), <reason for rejection>	Yellow	GCM status message received from NCCDS indicating GCMR was rejected.
GCM Status received for <GCMR_Type> # xxxxxxx, SUPIDEN xxxxxxx: Invalid <parameter name> Value of <parameter value>	Yellow	GCM status message received from NCCDS indicating GCMR was rejected because of a invalid service parameter value.
Error processing GCM ID #xxxxxxx: <explanation of error>	Red	A GCM message received from NCCDS was improperly formatted. DSMC operations should be contacted.

Table A-5. SNIF State Vector Alert Messages

Alert Message	Severity	Explanation
Type x IIRV ID #xxxxxxx, SIC xxxx, Epoch DDD HH:MM:SS.MMM transmitted to NCC	Green	State vector successfully transmitted to NCC.
Error transmitting Type x IIRV ID #xxxxxxx, SIC xxxx, Epoch DDD HH:MM:SS.MMM to NCC, will retry later	Yellow	There was an error in transmitting the state vector to NCCDS. The message is saved and transmission will be attempted later. Another alert will be displayed when transmission is successful.
Unable to connect to NCC Type x IIRV ID #xxxxxxx, SIC xxxx, Epoch DDD HH:MM:SS.MMM to NCC, will retry later	Yellow	There was a problem connecting to the NCCDS. The state vector is saved and transmission will be attempted later. Another alert will be displayed when transmission is successful.
IIRV ID #xxxxxxx invalid: Schedule Connection entry not found	Red	The SWSI database has not been properly configured for the SIC. The message is dropped. The SWSI DBA at DSMC should be contacted to correct the error.
IIRV ID #xxxxxxx invalid: <reason for invalid request>	Red	The state vector is not properly formatted and will be dropped. This error should not occur and is an indication of a SWSI software error. SWSI development support should be notified.

Table A-6. SNIF TSW Alert Messages

Alert Message	Severity	Explanation
TSW File xxxx, SUPIDEN xxxxxxx, TDRS xxx, Set ID xxxxxxx transmitted to NCC	Green	TSW file successfully transmitted to NCC.

Error transmitting TSW File xxxx, SUPIDEN xxxxxxxx, TDRS xxx, Set ID xxxxxxxx to NCC, will retry later	Yellow	There was an error in transmitting the TSW file to NCCDS. The message is saved and transmission will be attempted later. Another alert will be displayed when transmission is successful.
Unable to connect to NCC, will attempt later to send TSW File xxxx, SUPIDEN xxxxxxxx, TDRS xxx, Set ID xxxxxxxx	Yellow	There was a problem connecting to the NCCDS. The TSW file is saved and transmission will be attempted later. Another alert will be displayed when transmission is successful.
TSW File xxxx Invalid: error opening file	Red	This error should not occur and is an indication of a SWSI software error. SWSI development support should be notified.
TSW File xxxx Invalid: file too large (max size 8600 bytes)	Yellow	The maximum allowed size for a TSW file has been exceeded.
TSW File xxxx Invalid: invalid size	Yellow	The file size for a TSW is less than the minimum size. There isn't even enough data for a header (items 1-11).
TSW File xxxx Invalid: invalid message type	Yellow	The TSW Message Type (item 1) should be "99".
TSW File xxxx Invalid: invalid message class	Yellow	The TSW Message Class (item 3) should be "25".
TSW File xxxx Invalid: SIC/SUPIDEN mismatch	Red	This error should not occur and is an indication of a SWSI software error. SWSI development support should be notified.
TSW File xxxx Invalid: invalid Timespan Start	Yellow	The TSW Timespan Start (Item 9) is not a valid format (YYDDHHMMSS).
TSW File xxxx Invalid: invalid Timespan End	Yellow	The TSW Timespan End (Item 10) is not a valid format (YYDDHHMMSS).
TSW File xxxx Invalid: TSW count/message length mismatch	Yellow	The TSW file is not the correct length based on the Number of TSWs (item 11).
TSW File xxxx Invalid: Schedule Connection entry not found	Red	The SWSI database has not been properly configured for the SIC. The TSW message is dropped. The SWSI DBA at DSMC should be contacted to correct the error.

Table A-7. SNIF Performance Data Alert Messages

Alert Message	Severity	Explanation
RCTDM Received, SUPIDEN xxxxxxxx, <TDRS> <Service>	Green	Return Channel Time Delay Message received from NCCDS.
TTM Received, SUPIDEN xxxxxxxx, <TDRS> <Service>	Green	Time Transfer Message received from NCCDS.
Acquisition Failure, SUPIDEN xxxxxxxx, <TDRS> <Service>	Yellow	Acquisition Failure Notification message received from NCCDS.
Error processing Performance Data message ID #xxxxxxx: <explanation of error>	Red	A performance data message received from NCCDS was improperly formatted, or the SWSI server experienced an error processing the message. DSMC operations should be contacted.
Error processing UPD ID #xxxxxxx: <explanation of error>	Red	A UPD message received from NCCDS was improperly formatted, or the SWSI server experienced an error processing the message. DSMC operations should be contacted.

Appendix B. NCC Active Schedule File Format

B.1 General

The general format of the active schedule file for NCC-scheduled events stored automatically on the Client workstation as described in Section 8.8 is as follows:

```
CREATIONTIME="YYYY/DDD HH:MM:SS"
EVENTCOUNT="n"
SCHEDULEDEVENT1
    <Event-level parameters>
    .
    .
SERVICECOUNT="m"
SERVICE1
    SERVICETYPE="<service_type>"
    <Service-level parameters>
    .
    .
PARAMETERCOUNT="p"
PARAMETERS
    <Service parameter values>
    .
    .
ENDPARAMETERS
ENDSERVICE1
SERVICE2
    .
    .
ENDSERVICE2
    .
    .
SERVICEm
    .
    .
ENDSERVICEm
ENDSCHEDULEDEVENT1
SCHEDULEDEVENT2
    .
    .
ENDSCHEDULEDEVENT2
    .
    .
SCHEDULEDEVENTn
    .
    .
ENDSCHEDULEDEVENTn
```

In general, parameter or keyword assignments are of the following format:

<keyword>="<value>"

Where the <value> is always provided within quotes. In cases where a parameter may have no value, such as with the PROTOTYPE_EVENTID in the sample file in Section B.7, the value is still provided as a null value (e.g., PROTOTYPE_EVENTID="").

The block definition keywords are defined as follows:

- CREATIONTIME – time that file was created on SWSI server.
- EVENTCOUNT – total number of events in file.
- SCHEDULEDEVENT – start of an event-level information block. Relative event number is used as a suffix.
- ENDSCHEDULEDEVENT – end of an event-level information block.
- SERVICECOUNT – total number of services for an event.
- SERVICE - start of a service-level information block. Service number is used as a suffix.
- ENDSERVICE - end of a service-level information block.
- PARAMETERCOUNT – total number of service parameters. Included only if configured to receive parameter values.
- PARAMETERS – start of a parameter value block. Included only if configured to receive parameter values.
- ENDPARAMETERS - end of a parameter value block.

B.2 Event-Level Parameters

The following event-level parameters are provided:

- EVENTSTART – start time of the event in the format “YYYY/DDD HH:MM:SS”.
- EVENTSTOP – stop time of the event in the format “YYYY/DDD HH:MM:SS”.
- EVENTID – unique 7-character number used to reference the event.
- SUPIDEN – Support Identifier.
- TDRS – TDRS name
- VIC – Vehicle Identification Code.
- USMTYPE – class of latest USM received for this event may have one of the following values:
 - Fixed-Normal

- Fixed-Premium
- Fixed-Sim
- Flexible-Normal
- Flexible-Sim
- PROTOTYPE_EVENTID – Prototype Event ID code, if it was specified in the original request.
- SBANDPNCODE – S-band PN code assignment
- KBANDPNCODE – K/Ka-band PN code assignment

B.3 Service-Level Parameters

The following service-level parameters are provided:

- SERVICETYPE – service type (MAF, SSAF, MAR, etc.)
- SSCCODE – Service Specification Code (SSC) used to specify this service.
- SERVICESTART – start time of the service in the format “YYYY/DDD HH:MM:SS”.
- SERVICESTOP – stop time of the service in the format “YYYY/DDD HH:MM:SS”.
- LINKID – antenna or link ID.

B.4 Service Parameter Values

The service parameter values for each service type are listed in Tables B-1 through B-13. The parameter name used in the active schedule file, description, units, and possible enumeration values are provided for each parameter.

B.5 Sample File

Following is a sample of an active schedule file. In this case only one scheduled event is shown with three services. Service parameter values are included with enumerated parameters expanded to show a text string. For brevity not all service parameters are shown.

```

CREATIONTIME="2002/338 01:19:48"
EVENTCOUNT="1"
SCHEDULEDEVENT1
  EVENTSTART="2002/338 23:00:00"
  EVENTSTOP="2002/338 23:20:00"
  EVENTID="0102792"
  SUPIDEN="D8603WD"
  TDRS="TDE"
  VIC="01"

```

```

USMTYPE="Fixed-Normal"
SERVICECOUNT="3"
PROTOTYPE_EVENTID=" "
SBANDPNCODE="71"
KBANDPNCODE="71"
SERVICE1
    SERVICETYPE="SSAF"
    SSCCODE="H91"
    SERVICESTART="2002/338 23:00:00"
    SERVICESTOP="2002/338 23:20:00"
    LINKID="2"
    PARAMETERCOUNT="11"
    PARAMETERS
        ANTENNA="None"
        CCPN="Yes"
        DATARATEMAXF="2000"
        DOPC="Yes"
        .
        .
    ENDPARAMETERS
ENDSERVICE1
SERVICE2
    SERVICETYPE="SSAR"
    SSCCODE="I83"
    SERVICESTART="2002/338 23:00:00"
    SERVICESTOP="2002/338 23:20:00"
    LINKID="2"
    PARAMETERCOUNT="42"
    PARAMETERS
        ANTENNA="None"
        BIPHLOCVTI="No"
        BIPHLOCVTQ="No"
        CPR="+00"
        CROSSFL="MA"
        DATACHANNELCONFIG="Single source, identical data"
        DATACODINGI="Code 1"
        DATACODINGQ="Code 1"
        DATARATEMAXI="2048"
        DATARATEMAXQ="2048"
        .
        .
    ENDPARAMETERS
ENDSERVICE2
SERVICE3
    SERVICETYPE="TRKN"
    SSCCODE="T72"
    SERVICESTART="2002/338 23:00:00"
    SERVICESTOP="2002/338 23:20:00"
    LINKID=" "
    PARAMETERCOUNT="10"
    PARAMETERS
        FLCC="H91"

```

```

MARLINKID= "    "
NORMALDOPPLERTRACKING= "Two-way"
NORMALRANGETRACKING= "Yes"

.
.
ENDPARAMETERS
ENDSERVICE3
ENDSCHEDULEEVENT1

```

Table B-1. MAF/SMAF Service Parameters

Parameter Name	Description	Units	Enumeration Values
DATARATEMAXF	Maximum Data Rate	bps	
DOPC	Doppler Compensation Required		0="No", 1="Yes"
DTR1	Data Rate	bps	
FRQ1	Receive Frequency	10 Hz	
UDAN	User Despun Antenna Type		0="No type", 1="Type 1", 2="Type 2"
UIFCADDRESSF	User Interface Channel		

Table B-2. SSAF Service Parameters

Parameter Name	Description	Units	Enumeration Values
ANTENNA	SA Antenna		0="None", 1="SA1", 2="SA2"
CCPN	Command Channel PN Modulation		0="No", 1="Yes"
DATARATEMAXF	Maximum Data Rate	bps	
DOPC	Doppler Compensation Required		0="No", 1="Yes"
DTR1	Data Rate	bps	
FRQ1	Receive Frequency	10 Hz	
POLN	Polarization		0="LCP", 1="RCP"
POWERMODE	Power Mode		0="Normal", 1="High"
SERVICECONFIG	Service Configuration		1="Normal User"
UDAN	User Despun Antenna Type		0="No type", 1="Type 1", 2="Type 2"
UIFCADDRESSF	User Interface Channel		

Table B-3. KSAF/KASAF Service Parameters

Parameter Name	Description	Units	Enumeration Values
----------------	-------------	-------	--------------------

ANTENNA	SA Antenna		0="None", 1="SA1", 2="SA2"
CCPN	Command Channel PN Modulation		0="No", 1="Yes"
DATARATEMAXF	Maximum Data Rate	bps	
DOPC	Doppler Compensation Required		0="No", 1="Yes"
DTR1	Data Rate	bps	
FRQ1	Receive Frequency	10 Hz	
POLN	Polarization		0="LCP", 1="RCP"
POWERMODE	Power Mode		0="Normal", 1="High"
SERVICECONFIG	Service Configuration		1="Normal User"
UIFCADDRESSF	User Interface Channel		

Table B-4. MAR Service Parameters

Parameter Name	Description	Units	Enumeration Values
BIPHLOCVTI	Symbol Format Conversion I Channel		0="No", 1="Yes"
BIPHLOCVTQ	Symbol Format Conversion Q Channel		0="No", 1="Yes"
CONFIGURATION	Configuration		0="I Channel only", 1="Q Channel only", 2="Both I and Q Channel"
CPR	I/Q Channel Power Ratio	0.1 dB	
CROSSFL	Cross-Support Forward Link		1="SSA1", 2="SSA2"
DATACHANNELCONFIG	Data Channel Configuration		0="Single Data Source", 1="Dual Data Source"
DATARATEMAXI	Maximum Data Rate I Channel	bps	
DATARATEMAXQ	Maximum Data Rate Q Channel	bps	
DSD1	Data Stream ID I Channel	octal	
DSD2	Data Stream ID Q Channel	octal	
DTF1	Data Format Channel I		0="NRZ-L", 1="NRZ-M", 2="NRZ-S"
DTF2	Data Format Channel Q		0="NRZ-L", 1="NRZ-M", 2="NRZ-S"
DTR1	Data Rate I Channel	bps	
DTR2	Data Rate Q Channel	bps	
ERP1	Maximum EIRP	0.1 dB W	
ERP2	Minimum EIRP	0.1 dB W	
FRQ1	Transmit Frequency	10 Hz	
G2II	G2 Inversion I Channel		0="Normal", 1="Invert"
G2IQ	G2 Inversion Q Channel		0="Normal", 1="Invert"
JTR1	Data Bit Jitter I Channel		0="None", 1="0.01%", 2="0.1%"

JTR2	Data Bit Jitter Q Channel		0="None", 1="0.01%", 2="0.1%"
MDMMAXI	Maximum MDM Data Rate I Channel	bps	
MDMMAXQ	Maximum MDM Data Rate Q Channel	bps	
MODE	Mode		1="Mode 1 (Coherent)", 2="Mode 2 (Non-coherent)"
RECEIVERCONFIG	Receiver Configuration		0="Normal", 1="Cross Support"
RTNCHANDLYDATA	Return Channel Time Delay Data Required		0="No", 1="Yes"
UDAN	User Despun Antenna Type		0="No type", 1="Type 1", 2="Type 2"
UIFCADDRESSI	User Interface Channel ID I Channel		
UIFCADDRESSQ	User Interface Channel ID Q Channel		

Table B-5. SSAR Service Parameters

Parameter Name	Description	Units	Enumeration Values
ANTENNA	SA Antenna		0="None", 1="SA1", 2="SA2"
BIPHLOCVTI	Symbol Format Conversion I Channel		0="No", 1="Yes"
BIPHLOCVTQ	Symbol Format Conversion Q Channel		0="No", 1="Yes"
CPR	I/Q Channel Power Ratio	0.1 dB	
CROSSFL	Cross-Support Forward Link		0="MA", 1="SSA1", 2="SSA2", 3="SMA"
DATACHANNELCONFIG	Data Channel Configuration		0="Single source, identical data", 1="Dual source", 2="Single source, alternate data"
DATACODINGI	Data Coding I Channel		0="Uncoded", 1="Code 1", 2="Code 2", 3="Code 3"
DATACODINGQ	Data Coding Q Channel		0="Uncoded", 1="Code 1", 2="Code 2", 3="Code 3"
DATARATEMAXI	Maximum Data Rate I Channel	bps	
DATARATEMAXQ	Maximum Data Rate Q Channel	bps	
DG	Data Group		1="DG1", 2="DG2"
DG1CONFIGURATION	DG1 Configuration		0="I Channel only", 1="Q Channel only", 2="Both I and Q Channel"
DG1M	DG1 Mode		1="Mode 1, Coherent", 2="Mode 2, Noncoherent", 3="Mode 3, Coherent, no Q deinterleave", 4="Mode 3, Coherent, Q deinterleave"

DG2M	DG2 Modulation		0="QPSK", 1="BPSK"
DG2T	DG2 Type		0="Noncoherent, I and Q deinterleave", 1="Noncoherent, no deinterleave", 2="Coherent, no deinterleave", 3="Coherent, I and Q deinterleave", 4="Noncoherent, I deinterleave", 5="Noncoherent, Q deinterleave", 6="Coherent, Q deinterleave", 7="Coherent, I deinterleave"
DSD1	Data Stream ID I Channel	octal	
DSD2	Data Stream ID Q Channel	octal	
DTF1	Data Format Channel I		0="NRZ-L", 1="NRZ-M", 2="NRZ-S", 3="Biphase-L", 4="Biphase-M", 5="Biphase-S"
DTF2	Data Format Channel Q		0="NRZ-L", 1="NRZ-M", 2="NRZ-S", 3="Biphase-L", 4="Biphase-M", 5="Biphase-S"
DTR1	Data Rate I Channel	bps	
DTR2	Data Rate Q Channel	bps	
ERP1	Maximum EIRP	0.1 dB W	
ERP2	Minimum EIRP	0.1 dB W	
FRQ1	Transmit Frequency	10 Hz	
G2I	G2 Inversion I Channel		0="Normal", 1="Invert"
G2Q	G2 Inversion Q Channel		0="Normal", 1="Invert"
HDRMMAXI	Maximum HDRM Data Rate I Channel	bps	
HDRMMAXQ	Maximum HDRM Data Rate Q Channel	bps	
HDRMPORTI	High Data Rate Multiplexer Port I Channel		
HDRMPORTQ	High Data Rate Multiplexer Port Q Channel		
JTR1	Data Bit Jitter I Channel		0="None", 1="0.01%", 2="0.1%"
JTR2	Data Bit Jitter Q Channel		0="None", 1="0.01%", 2="0.1%"
MDMMAXI	Maximum MDM Data Rate I Channel	bps	
MDMMAXQ	Maximum MDM Data Rate Q Channel	bps	
POLN	Polarization		0="LCP", 1="RCP"
RECEIVERCONFIG	Receiver Configuration		0="Normal", 1="Cross Support"
RTNCHANDLYDATA	Return Channel Time Delay Data Required		0="No", 1="Yes"
SERVICECONFIG	Service Configuration		1="Normal User"
SSACOMBINING	SSA Combining		0="No", 1="Yes"
UDAN	User Despun Antenna Type		0="No type", 1="Type 1", 2="Type 2"

UIFCADDRESSI	User Interface Channel ID I Channel		
UIFCADDRESSQ	User Interface Channel ID Q Channel		

Table B-6. SMAR Service Parameters

Parameter Name	Description	Units	Enumeration Values
BIPHLOCVTI	Symbol Format Conversion I Channel		0="No", 1="Yes"
BIPHLOCVTQ	Symbol Format Conversion Q Channel		0="No", 1="Yes"
CPR	I/Q Channel Power Ratio	0.1 dB	
CROSSFL	Cross-Support Forward Link		0="MA", 1="SSA1", 2="SSA2", 3="SMA"
DATACHANNELCONFIG	Data Channel Configuration		0="Single source, identical data", 1="Dual source", 2="Single source, alternate data"
DATACODINGI	Data Coding I Channel		0="Uncoded", 1="Code 1", 2="Code 2", 3="Code 3"
DATACODINGQ	Data Coding Q Channel		0="Uncoded", 1="Code 1", 2="Code 2", 3="Code 3"
DATARATEMAXI	Maximum Data Rate I Channel	bps	
DATARATEMAXQ	Maximum Data Rate Q Channel	bps	
DG	Data Group		1="DG1", 2="DG2"
DG1CONFIGURATION	DG1 Configuration		0="I Channel only", 1="Q Channel only", 2="Both I and Q Channel"
DG1M	DG1 Mode		1="Mode 1, Coherent", 2="Mode 2, Noncoherent", 3="Mode 3, Coherent, no Q deinterleave", 4="Mode 3, Coherent, Q deinterleave"
DG2M	DG2 Modulation		0="QPSK", 1="BPSK"
DG2T	DG2 Type		0="Noncoherent, I and Q deinterleave", 1="Noncoherent, no deinterleave", 2="Coherent, no deinterleave", 3="Coherent, I and Q deinterleave", 4="Noncoherent, I deinterleave", 5="Noncoherent, Q deinterleave", 6="Coherent, Q deinterleave", 7="Coherent, I deinterleave"
DSD1	Data Stream ID I Channel	octal	
DSD2	Data Stream ID Q Channel	octal	
DTF1	Data Format Channel I		0="NRZ-L", 1="NRZ-M", 2="NRZ-S", 3="Biphase-L", 4="Biphase-M", 5="Biphase-S"

DTF2	Data Format Channel Q		0="NRZ-L", 1="NRZ-M", 2="NRZ-S", 3="Biphase-L", 4="Biphase-M", 5="Biphase-S"
DTR1	Data Rate I Channel	bps	
DTR2	Data Rate Q Channel	bps	
ERP1	Maximum EIRP	0.1 dB W	
ERP2	Minimum EIRP	0.1 dB W	
FRQ1	Transmit Frequency	10 Hz	
G2II	G2 Inversion I Channel		0="Normal", 1="Invert"
G2IQ	G2 Inversion Q Channel		0="Normal", 1="Invert"
HDRMMAXI	Maximum HDRM Data Rate I Channel	bps	
HDRMMAXQ	Maximum HDRM Data Rate Q Channel	bps	
HDRMPORTI	High Data Rate Multiplexer Port I Channel		
HDRMPORTQ	High Data Rate Multiplexer Port Q Channel		
JTR1	Data Bit Jitter I Channel		0="None", 1="0.01%", 2="0.1%"
JTR2	Data Bit Jitter Q Channel		0="None", 1="0.01%", 2="0.1%"
MDMMAXI	Maximum MDM Data Rate I Channel	bps	
MDMMAXQ	Maximum MDM Data Rate Q Channel	bps	
RECEIVERCONFIG	Receiver Configuration		0="Normal", 1="Cross Support"
RTNCHANDLYDATA	Return Channel Time Delay Data Required		0="No", 1="Yes"
SERVICECONFIG	Service Configuration		1="Normal User"
UDAN	User Despun Antenna Type		0="No type", 1="Type 1", 2="Type 2"
UIFCADDRESSI	User Interface Channel ID I Channel		
UIFCADDRESSQ	User Interface Channel ID Q Channel		

Table B-7. KSAR Service Parameters

Parameter Name	Description	Units	Enumeration Values
ANTENNA	SA Antenna		0="None", 1="SA1", 2="SA2"
ATBW	Autotrack Enable/Disable		00000000="Enable", 00000001="Disable"
BIPHLOCVTI	Symbol Format Conversion I Channel		0="No", 1="Yes"
BIPHLOCVTQ	Symbol Format Conversion Q Channel		0="No", 1="Yes"
CPR	I/Q Channel Power Ratio	0.1 dB	

DATACHANNELCONFIG	Data Channel Configuration		0="Single Data Source", 1="Dual Data Source"
DATACODINGI	Data Coding I Channel		0="Uncoded", 1="Code 1"
DATACODINGQ	Data Coding Q Channel		0="Uncoded", 1="Code 1"
DATARATEMAXI	Maximum Data Rate I Channel	bps	
DATARATEMAXQ	Maximum Data Rate Q Channel	bps	
DG	Data Group		1="DG1", 2="DG2"
DG1CONFIGURATION	DG1 Configuration		0="I Channel only", 1="Q Channel only", 2="Both I and Q Channel"
DG1M	DG1 Mode		1="Mode 1, Coherent (PN on I and Q)", 2="Mode 2, Noncoherent (PN on I and Q)", 3="Mode 3, Coherent (PN on I)"
DG2M	DG2 Modulation		0="QPSK", 1="BPSK"
DG2T	DG2 Type		1="Noncoherent", 2="Coherent"
DSD1	Data Stream ID I Channel	octal	
DSD2	Data Stream ID Q Channel	octal	
DTF1	Data Format Channel I		0="NRZ-L", 1="NRZ-M", 2="NRZ-S", 3="Biphase-L", 4="Biphase-M", 5="Biphase-S"
DTF2	Data Format Channel Q		0="NRZ-L", 1="NRZ-M", 2="NRZ-S", 3="Biphase-L", 4="Biphase-M", 5="Biphase-S"
DTR1	Data Rate I Channel	bps	
DTR2	Data Rate Q Channel	bps	
ERP1	Maximum EIRP	0.1 dB W	
ERP2	Minimum EIRP	0.1 dB W	
FRQ1	Transmit Frequency	10 Hz	
G2I	G2 Inversion I Channel		0="Normal", 1="Invert"
G2Q	G2 Inversion Q Channel		0="Normal", 1="Invert"
HDRMMAXI	Maximum HDRM Data Rate I Channel	bps	
HDRMMAXQ	Maximum HDRM Data Rate Q Channel	bps	
JTR1	Data Bit Jitter I Channel		0="None", 1="0.01%", 2="0.1%"
JTR2	Data Bit Jitter Q Channel		0="None", 1="0.01%", 2="0.1%"
MDMMAXI	Maximum MDM Data Rate I Channel	bps	
MDMMAXQ	Maximum MDM Data Rate Q Channel	bps	
POLN	Polarization		0="LCP", 1="RCP"
RTNCHANDLYDATA	Return Channel Time Delay Data Required		0="No", 1="Yes"

SERVICECONFIG	Service Configuration		1="Normal User"
UIFCADDRESSI	User Interface Channel ID I Channel		
UIFCADDRESSLI	User Interface Channel ID Low Rate Port I Channel		
UIFCADDRESSLQ	User Interface Channel ID Low Rate Port Q Channel		
UIFCADDRESSQ	User Interface Channel ID Q Channel		

Table B-8. KASAR Service Parameters

Parameter Name	Description	Units	Enumeration Values
ANTENNA	SA Antenna		0="None", 1="SA1", 2="SA2"
ATBW	Autotrack Enable/Disable		00000000="Enable", 00000001="Disable"
BIPHLOCVTI	Symbol Format Conversion I Channel		0="No", 1="Yes"
BIPHLOCVTQ	Symbol Format Conversion Q Channel		0="No", 1="Yes"
CPR	I/Q Channel Power Ratio	0.1 dB	
DATACHANNELCONFIG	Data Channel Configuration		0="Single Data Source", 1="Dual Data Source"
DATACODINGI	Data Coding I Channel		0="Uncoded", 1="Code 1"
DATACODINGQ	Data Coding Q Channel		0="Uncoded", 1="Code 1"
DATARATEMAXI	Maximum Data Rate I Channel	bps	
DATARATEMAXQ	Maximum Data Rate Q Channel	bps	
DG	Data Group		2="DG2"
DG1CONFIGURATION	DG1 Configuration		0="I Channel only", 1="Q Channel only", 2="Both I and Q Channel"
DG2M	DG2 Modulation		0="QPSK", 1="BPSK"
DG2T	DG2 Type		1="Noncoherent"
DSD1	Data Stream ID I Channel	octal	
DSD2	Data Stream ID Q Channel	octal	
DTF1	Data Format Channel I		0="NRZ-L", 1="NRZ-M", 2="NRZ-S", 3="Biphase-L", 4="Biphase-M", 5="Biphase-S"
DTF2	Data Format Channel Q		0="NRZ-L", 1="NRZ-M", 2="NRZ-S", 3="Biphase-L", 4="Biphase-M", 5="Biphase-S"
DTR1	Data Rate I Channel	bps	
DTR2	Data Rate Q Channel	bps	
ERP1	Maximum EIRP	0.1 dB W	
ERP2	Minimum EIRP	0.1 dB W	
FRQ1	Transmit Frequency	10 Hz	

G2I	G2 Inversion I Channel		0="Normal", 1="Invert"
G2IQ	G2 Inversion Q Channel		0="Normal", 1="Invert"
HDRMMAXI	Maximum HDRM Data Rate I Channel	bps	
HDRMMAXQ	Maximum HDRM Data Rate Q Channel	bps	
JTR1	Data Bit Jitter I Channel		0="None", 1="0.01%", 2="0.1%"
JTR2	Data Bit Jitter Q Channel		0="None", 1="0.01%", 2="0.1%"
KAWIDEBAND?	Data Channel Configuration		
MDMMAXI	Maximum MDM Data Rate I Channel	bps	
MDMMAXQ	Maximum MDM Data Rate Q Channel	bps	
POLN	Polarization		0="LCP", 1="RCP"
RTNCHANDLYDATA	Return Channel Time Delay Data Required		0="No", 1="Yes"
SERVICECONFIG	Service Configuration		1="Normal User"
UIFCADDRESSI	User Interface Channel ID I Channel		
UIFCADDRESSLI	User Interface Channel ID Low Rate Port I Channel		
UIFCADDRESSLQ	User Interface Channel ID Low Rate Port Q Channel		
UIFCADDRESSQ	User Interface Channel ID Q Channel		

Table B-9. KSARWB Service Parameters

Parameter Name	Description	Units	Enumeration Values
ANTENNA	SA Antenna		0="None", 1="SA1", 2="SA2"
DATARATEMAXI	Maximum Data Rate I Channel	bps	
DATARATEMAXQ	Maximum Data Rate Q Channel	bps	
FRQ1	Transmit Frequency	10 Hz	
HDRMMAXI	Maximum HDRM Data Rate I Channel	bps	
HDRMMAXQ	Maximum HDRM Data Rate Q Channel	bps	
KAWIDEBAND?	Data Channel Configuration		
MDMMAXI	Maximum MDM Data Rate I Channel	bps	
MDMMAXQ	Maximum MDM Data Rate Q Channel	bps	
POLN	Polarization		0="LCP", 1="RCP"
SERVICECONFIG	Service Configuration		1="Normal User"

Table B-10. TRKN Service Parameters

Parameter Name	Description	Units	Enumeration Values
FLCC	Reference Forward Link		
MARLINKID	MA/SMA Return Link ID		

NORMALDOPPLERTRACKING	Doppler Tracking Required		0="Not Required", 1="One-way", 2="Two-way"
NORMALRANGETRACKING	Range Tracking Required		0="No", 1="Yes"
NORMALRETURNSERVICE	Return Service Type		0="MA", 1="SSA", 2="KSA", 5="SMA"
RLCC	Reference Return Link		
SRRQ	Sample Rate	samples/sec	0="1/1", 1="1/5", 2="1/10", 3="1/60", 4="1/300"
TRACKINGCONFIG	Tracking Configuration		0="Normal Tracking"
TTNR	Time Transfer Number of Samples	sample	
TTTR	Time Transfer Required		0="No", 1="Yes"

Table B-11. TRKC Service Parameters

Parameter Name	Description	Units	Enumeration Values
CROSSTRACKINGTYPE	Range/Doppler for Cross Support		0="Range", 1="Two-way Doppler", 2="Both",
FLCC	Reference Forward Link		
FWDLINK	Forward Link		0="MA", 1="SSA1", 2="SSA2", 3="SMA",
RLCC	Reference Return Link		
RTNLINK	Return Link		0="MA", 1="SSA1", 2="SSA2", 3="SMA",
SRRQ	Sample Rate	samples/sec	0="1/1", 1="1/5", 2="1/10", 3="1/60", 4="1/300",
TRACKINGCONFIG	Tracking Configuration		1="Cross Support",
TTNR	Time Transfer Number of Samples	sample	
TTTR	Time Transfer Required		0="No", 1="Yes",

Table B-12. EETF Service Parameters

Parameter Name	Description	Units	Enumeration Values
FORWARDGAIN	Simulation Gain/Temperature	0.1 dB/K	

LOCALDATASUPPORT	Local or MOC Data		0="Local signal source", 1="MOC signal source"
DATASTREAMID	Data Stream ID	octal	
UIFCADDRESSI	User Interface Channel ID		

Table B-13. EETR Service Parameters

Parameter Name	Description	Units	Enumeration Values
LOCALDATASUPPORT	Local or MOC Data		0="Local signal source", 1="MOC signal source"
RTNEIRP	Simulation EIRP	0.1 dB W	
UIFCADDRESSA	User Interface Channel ID		
UIFCADDRESSB	User Interface Channel ID		

Appendix C. DAS Active Schedule File Format

C.1 General

The general format of the active schedule file for DAS-scheduled events stored automatically on the Client workstation as described in Section 8.8 is as follows:

```
CREATIONTIME="YYYY/DDD HH:MM:SS"
EVENTCOUNT="n"
SCHEDULEDEVENT1
    <Event-level parameters>
    .
    .
SERVICECOUNT="m"
SERVICE1
    SERVICETYPE="<service_type>"
    PARAMETERCOUNT="p"
    PARAMETERS
        <Service parameter values>
        .
        .
    ENDPARAMETERS
    SERVICEPERIODCOUNT="t"
    SERVICEPERIOD1
        <Service period values>
    ENDSERVICEPERIOD1
    .
    .
    SERVICEPERIODt
        <Service period values>
    ENDSERVICEPERIODt
ENDSERVICE1
.
.
SERVICEm
.
.
ENDSERVICEm
ENDSCHEDULEDEVENT1
SCHEDULEDEVENT2
.
.
ENDSCHEDULEDEVENT2
.
.
SCHEDULEDEVENTn
.
.
```

ENDSCHEDULEDEVENTn

In general, parameter or keyword assignments are of the following format:

<keyword>="<value>"

Where the <value> is always provided within quotes. In cases where a parameter may have no value, the value is still provided as a null value (e.g., PROTOTYPE_EVENTID="").

The block definition keywords are defined as follows:

- CREATIONTIME – time that file was created on SWSI server.
- EVENTCOUNT – total number of events in file.
- SCHEDULEDEVENT – start of an event-level information block. Relative event number is used as a suffix.
- ENDSCHEDULEDEVENT – end of an event-level information block.
- SERVICECOUNT – total number of services for an event.
- SERVICE - start of a service-level information block. Service number is used as a suffix.
- ENDSERVICE - end of a service-level information block.
- PARAMETERCOUNT – total number of service parameters. Included only if configured to receive parameter values. Not provided for playback events.
- PARAMETERS – start of a parameter value block. Included only if configured to receive parameter values. Not provided for playback events.
- ENDPARAMETERS - end of a parameter value block.
- SERVICEPERIODCOUNT – total number of service periods. Not provided for playback events.
- SERVICEPERIOD – start of a service period-level information block. Service period number is used as a suffix. Not provided for playback events.
- ENDSERVICEPERIOD - end of a service period-level information block.

C.2 Event-Level Parameters

The following event-level parameters are provided:

- EVENTSTART – start time of the event in the format “YYYY/DDD HH:MM:SS”.

- SERVICEPERIODTDRS – TDRS name.
- SUPPORTSTATUS – status of the support period may have one of the following values:

- Granted
- Pending

C.6 Sample File

Following is a sample of an active schedule file. In this case only two scheduled events are shown, each with one service. Service parameter values are included with enumerated parameters expanded. For brevity not all service parameters and TDRS service periods are shown.

```

CREATIONTIME="2002/365 19:52:51"
EVENTCOUNT="2"
SCHEDULEDEVENT1
  EVENTSTART="2003/001 00:00:00"
  EVENTSTOP="2003/001 00:25:29"
  EVENTID="4997125"
  TDRS="275"
  SIC="6951"
  SERVICECOUNT="1"
  SERVICE1
    SERVICETYPE="DASPBK"
    IPADDRESS="1.1.1.1"
    PORTNUMBER="7000"
    REALTIMEEVENTREQUESTID="4990278"
    STARTTIMEOFRALTIMEDATASEGMENT="2002/365 00:54:05"
  ENDSERVICE1
ENDSCHEDULEDEVENT1
SCHEDULEDEVENT2
  EVENTSTART="2002/365 23:30:00"
  EVENTSTOP="2003/001 10:00:00"
  EVENTID="8901484"
  TDRS="ANY"
  SIC="6951"
  SERVICECOUNT="1"
  SERVICE1
    SERVICETYPE="DASMAR"
    PARAMETERCOUNT="15"
    PARAMETERS
      Protocols_Data="Async"
      Storage_Duration="3"
      IP_Add_I="150.144.173.78"
      Data_Fmt_I="NRZ-L"
      .
      .
    ENDPARAMETERS
  SERVICEPERIODCOUNT="21"
  SERVICEPERIOD1
    SERVICEPERIODSTARTTIME="2002/365 23:30:00"
    SERVICEPERIODSTOPPTIME="2002/365 23:41:00"
    SERVICEPERIODTDRS="TDW"
    TDRSSUPPORTSTATUS="Granted"

```

```

ENDSERVICEPERIOD1
.
.
SERVICEPERIOD21
    SERVICEPERIODSTARTTIME="2003/001 09:59:00"
    SERVICEPERIODSTOPTIME="2003/001 10:00:00"
    SERVICEPERIODTDRS="TDE"
    TDRSSUPPORTSTATUS="Granted"
ENDSERVICEPERIOD21
ENDSERVICE1
ENDSCHEDULEEVENT2

```

Table C-1. DASMAR Service Parameters

Parameter Name	Description	Units	Enumeration Values
Acq_Mode	Acquisition Mode		Mode A="Mode A (700 Hz)" Mode B="Mode B (3000 Hz)"
Carrier_Freq_Ref	Acquisition Center Frequency	Hz	
Data_Fmt_I	Data Format I Channel		L="NRZ-L" M="NRZ-M" S="NRZ-S"
Data_Fmt_Q	Data Format Q Channel		L="NRZ-L" M="NRZ-M" S="NRZ-S"
Data_Rate_I	Data Rate I Channel	bps	
Data_Rate_Q	Data Rate Q Channel	bps	
Data_class_ID	Data Class ID		Not Applicable CCSDS frame CCSDS packet TDM frame Stripped TDM frame
Frame_length_I	Frame length I Channel	bytes	
Frame_length_Q	Frame length Q Channel	bytes	
Frame_sync_I	Frame Synchronization I Channel		On Off
Frame_sync_Q	Frame Synchronization Q Channel		On Off
G2_Symb_Inv_I	G2 Symbol Inversion I Channel		Upright Inverted
G2_Symb_Inv_Q	G2 Symbol Inversion Q Channel		Upright Inverted
IBU_Mode	Independent Beamforming Unit Mode		Adaptive mode Pointing mode
IP_Add_I	Destination IP Address I Channel		
IP_Add_Q	Destination IP Address Q Channel		
Mission_ID	Mission Identifier		
Modulation_Data_Ch	Modulation/Data Channel		BPSK SQPN single channel SQPN dual channel
PN_Code_I	Pseudo-random noise code I Channel	octal	
PN_Code_Q	Pseudo-random noise code Q Channel	octal	
Port_Num_I	Destination TCP Port Number I Channel		
Port_Num_Q	Destination TCP Port Number Q Channel		

Protocols_Data	Protocols (Data Format)		ACE AXAF-I IPDU LEO-T SFDU Async
Storage_Duration	Data storage duration	days	
Symb_Fmt_I	Symbol Format I Channel		NRZ="NRZ" Biphase="BIO-L"
Symb_Fmt_Q	Symbol Format Q Channel		NRZ="NRZ" Biphase="BIO-L"
Sync_mask_I	Frame Sync Mask I Channel	hex	
Sync_mask_Q	Frame Sync Mask Q Channel	hex	
Sync_pattern_I	Frame Sync Pattern I Channel	hex	
Sync_pattern_Q	Frame Sync Pattern Q Channel	hex	
Sync_pattern_lock_I	Allowable frame sync pattern errors during lock I Channel		
Sync_pattern_lock_Q	Allowable frame sync pattern errors during lock Q Channel		
Sync_pattern_search_I	Allowable frame sync pattern errors during search I Channel		
Sync_pattern_search_Q	Allowable frame sync pattern errors during search Q Channel		
VCP_CRC_I	Virtual Channel Processing CRC I Channel		On Off
VCP_CRC_Q	Virtual Channel Processing CRC Q Channel		On Off
VCP_CRC_Location_I	Virtual Channel Processing CRC Location I Channel		
VCP_CRC_Location_Q	Virtual Channel Processing CRC Location Q Channel		
VCP_I	Virtual Channel Processing I Channel		On Off
VCP_Q	Virtual Channel Processing Q Channel		On Off
VCP_RS_Interleave_I	Virtual Channel Processing Reed Solomon Interleave Depth I Channel		
VCP_RS_Interleave_Q	Virtual Channel Processing Reed Solomon Interleave Depth Q Channel		
VCP_RS_Location_I	Virtual Channel Processing Reed Solomon Codeword Location I Channel		
VCP_RS_Location_Q	Virtual Channel Processing Reed Solomon Codeword Location Q Channel		
VCP_RS_Virtual_Fill_I	Virtual Channel Processing Reed Solomon Virtual Fill I Channel		
VCP_RS_Virtual_Fill_Q	Virtual Channel Processing Reed Solomon Virtual Fill Q Channel		
VCP_Reed_Solomon_I	Virtual Channel Processing Reed Solomon I Channel		On Off
VCP_Reed_Solomon_Q	Virtual Channel Processing Reed Solomon Q Channel		On Off
VCP_Segregation_I	Virtual Channel Processing Segregation I Channel		On Off
VCP_Segregation_Q	Virtual Channel Processing Segregation Q Channel		On Off
VCP_Segregation_IP_Address_I	Virtual Channel Processing Segregation Destination IP Address I Channel		

VCP_Segregation_IP_Address_Q	Virtual Channel Processing Segregation Destination IP Address Q Channel		
VCP_Segregation_Port_Num_I	Virtual Channel Processing Segregation Destination TCP Port Number I Channel		
VCP_Segregation_Port_Num_Q	Virtual Channel Processing Segregation Destination TCP Port Number Q Channel		

Appendix D. UPD Detail Panel Contents

D.1 General

The UPD parameter values that are displayed in the UPD Detail Panel standard layouts are listed in Tables D-1 through D-15. The Parameter Name is used when editing a layout to specify which mnemonicName (parameter) is used for a display component. These names are also used in the UPD log file described in Appendix D. For enumerated parameters, the server sends numeric values to the Client, which then performs a translation to text according to the Enumeration Value assignments. Enumeration parameters that are also limit-checked are indicated in the tables by a Severity assignment for each enumeration value. Limit-checking and its effect on the UPD displays is described in more detail in Section 9.2.

Table D-1. MAF/SMAF UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Elevation	Elevation	deg	
Radiated_Freq	Radiated Carrier Frequency	MHz	
Signal_EIRP	Signal EIRP	dBW	
Clock_Presence	Clock Presence		0="No" (Red) 1="Yes" (Green)
Data_Density	Data Transition Density	%	
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-2. SSAF UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Elevation	Elevation	deg	
Polarization	Polarization		0="LCP" 1="RCP"
Signal_EIRP	Signal EIRP	dBW	

Radiated_Freq	Radiated Carrier Frequency	MHz	
Power_Mode	Power Mode		0="Normal" 1="High"
Doppler_Comp	Doppler Compensation		0="Off" 1="On"
PN_Modulation	Command Channel PN Modulation		0="No" 1="Yes"
Clock_Presence	Clock Presence		0="No" (Red) 1="Yes" (Green)
Data_Density	Data Transition Density	%	
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-3. KSAF UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Elevation	Elevation	deg	
Polarization	Polarization		0="LCP" 1="RCP"
Signal_EIRP	Signal EIRP	dBW	
Radiated_Freq	Radiated Carrier Frequency	MHz	
Power_Mode	Power Mode		0="Normal" 1="High"
Doppler_Comp	Doppler Compensation		0="Off" 1="On"
PN_Modulation	Command Channel PN Modulation		0="No" 1="Yes"
Clock_Presence	Clock Presence		0="No" (Red) 1="Yes" (Green)
Data_Density	Data Transition Density	%	
TDRS_Yaw	TDRS Yaw	Deg	
TDRS_Roll	TDRS Roll	Deg	
TDRS_Pitch	TDRS Pitch	Deg	

Table D-4. KaSAF UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Elevation	Elevation	deg	
Polarization	Polarization		0="LCP" 1="RCP"

Signal_EIRP	Signal EIRP	dBW	
Radiated_Freq	Radiated Carrier Frequency	MHz	
Power_Mode	Power Mode		0="Normal" 1="High"
Doppler_Comp	Doppler Compensation		0="Off" 1="On"
PN_Modulation	Command Channel PN Modulation		0="No" 1="Yes"
Clock_Presence	Clock Presence		0="No" (Red) 1="Yes" (Green)
Data_Density	Data Transition Density	%	
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-5. MAR UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Beamforming_Equip_ID	Scheduled MA Return Link ID		
Elevation	Elevation	deg	
Doppler_Tracking	Doppler Tracking Status		0="Inactive" 1="One-way" 2="Two-way" 3="Cross-support"
Mode	Mode		1="Mode 1 (Coherent) 2="Mode 2 (Non-coherent)
IR_Lock	Integrated Receiver Lock Indicator		0="No Lock" (Red) 1="Lock" (Green)
IR_Signal_Strength	Integrated Receiver Signal Strength	dB-Hz	
Symbol_Sync_Lock_I	Symbol Synchronizer Lock Indicator, I Channel		0="No Lock" 1="Lock"
Symbol_Sync_Lock_Q	Symbol Synchronizer Lock Indicator, Q Channel		0="No Lock" 1="Lock"
BER_Status_I	BER Status, I Channel		0="Status not valid" (Red) 1="BER >= 10-3" (Red) 2="10-3 > BER >= 10-4" (Red) 3="10-4 > BER >= 10-5" (Red) 4="10-5 > BER >= 10-6" (Green) 5="10-6 > BER >= 10-7" (Green) 6="10-7 > BER >= 10-8" (Green) 7="10-8 > BER >= 10-9" (Green) 8="BER < 10-9" (Green)

BER_Status_Q	BER Status, Q Channel		0="Status not valid" (Red) 1="BER >= 10-3" (Red) 2="10-3 > BER >= 10-4" (Red) 3="10-4 > BER >= 10-5" (Red) 4="10-5 > BER >= 10-6" (Green) 5="10-6 > BER >= 10-7" (Green) 6="10-7 > BER >= 10-8" (Green) 7="10-8 > BER >= 10-9" (Green) 8="BER < 10-9" (Green)
Frame_Sync_Mode_I	Frame Sync Mode, I Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Frame_Sync_Mode_Q	Frame Sync Mode, Q Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Clock_Presence_I	Clock Presence, I Channel		0="No" (Red) 1="Yes" (Green)
Clock_Presence_Q	Clock Presence, Q Channel		0="No" (Red) 1="Yes" (Green)
Data_Density_I	Data Transition Density, I Channel	%	
Data_Density_Q	Data Transition Density, Q Channel	%	
Frames_in_Lock_I	Percent Frames in Lock, I Channel	%	
Frames_in_Lock_Q	Percent Frames in Lock, Q Channel	%	
Sync_Dropout_Count_I	Sync Lock Dropout Count, I Channel		
Sync_Dropout_Count_Q	Sync Lock Dropout Count, Q Channel		
Frame_Sync_Word_BER_I	Frame Sync Word BER, I Channel		
Frame_Sync_Word_BER_Q	Frame Sync Word BER, Q Channel		
Range_Tracking_Status	Range Tracking Status		0="Inactive" 1="Active" 2="Cross-support"
Receiver_Coherency	Receiver Coherency Indicator		0="Noncoherent" 1="Coherent"
Channel_Power_Ratio	I/Q Channel Power Ratio	dB	
Configuration	Configuration		0="I Channel Only" 1="Q Channel Only" 2="I and Q Channels"
Data_Channel_Config	Data Channel Configuration		0="Single source" 1="Dual source"
Data_Format_Conv_I	Data Format Conversion Configuration, I Channel		0="No" 1="Yes"
Data_Format_Conv_Q	Data Format Conversion Configuration, Q Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_I	Symbol Format Conversion Biphase to NRZ, I Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_Q	Symbol Format Conversion Biphase to NRZ, Q Channel		0="No" 1="Yes"
G2_Inversion_I	G2 Inversion, I Channel		0="Not inverted" 1="Inverted"
G2_Inversion_Q	G2 Inversion, Q Channel		0="Not inverted" 1="Inverted"
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-6. SSAR DG1 UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Elevation	Elevation	deg	
Polarization	Polarization		0="LCP" 1="RCP"
Doppler_Tracking	Doppler Tracking Status		0="Inactive" 1="One-way" 2="Two-way" 3="Cross-support"
IR_Lock	Integrated Receiver Lock Indicator		0="No Lock" (Red) 1="Lock" (Green)
IR_Signal_Strength	Integrated Receiver Signal Strength	dB-Hz	
Receiver_Coherency	Receiver Coherency Indicator		0="Noncoherent" 1="Coherent"
DG1_Mode	DG1 Mode		1="Mode 1" 2="Mode 2" 3="Mode 3"
Dinterleaving	Deinterleaving Selection		0="No deinterleaving" 1="I Deinterleaved" 2="Q Deinterleaved" 3="I and Q Deinterleaved"
Symbol_Sync_Lock_I	Symbol Synchronizer Lock Indicator, I Channel		0="No Lock" 1="Lock"
Symbol_Sync_Lock_Q	Symbol Synchronizer Lock Indicator, Q Channel		0="No Lock" 1="Lock"
BER_Status_I	BER Status, I Channel		0="Status not valid" (Red) 1="BER >= 10 ⁻³ " (Red) 2="10 ⁻³ > BER >= 10 ⁻⁴ " (Red) 3="10 ⁻⁴ > BER >= 10 ⁻⁵ " (Red) 4="10 ⁻⁵ > BER >= 10 ⁻⁶ " (Green) 5="10 ⁻⁶ > BER >= 10 ⁻⁷ " (Green) 6="10 ⁻⁷ > BER >= 10 ⁻⁸ " (Green) 7="10 ⁻⁸ > BER >= 10 ⁻⁹ " (Green) 8="BER < 10 ⁻⁹ " (Green)
BER_Status_Q	BER Status, Q Channel		0="Status not valid" (Red) 1="BER >= 10 ⁻³ " (Red) 2="10 ⁻³ > BER >= 10 ⁻⁴ " (Red) 3="10 ⁻⁴ > BER >= 10 ⁻⁵ " (Red) 4="10 ⁻⁵ > BER >= 10 ⁻⁶ " (Green) 5="10 ⁻⁶ > BER >= 10 ⁻⁷ " (Green) 6="10 ⁻⁷ > BER >= 10 ⁻⁸ " (Green) 7="10 ⁻⁸ > BER >= 10 ⁻⁹ " (Green) 8="BER < 10 ⁻⁹ " (Green)
Frame_Sync_Mode_I	Frame Sync Mode, I Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"

Frame_Sync_Mode_Q	Frame Sync Mode, Q Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Clock_Presence_I	Clock Presence, I Channel		0="No" (Red) 1="Yes" (Green)
Clock_Presence_Q	Clock Presence, Q Channel		0="No" (Red) 1="Yes" (Green)
Data_Density_I	Data Transition Density, I Channel	%	
Data_Density_Q	Data Transition Density, Q Channel	%	
Frames_in_Lock_I	Percent Frames in Lock, I Channel	%	
Frames_in_Lock_Q	Percent Frames in Lock, Q Channel	%	
Sync_Dropout_Count_I	Sync Lock Dropout Count, I Channel		
Sync_Dropout_Count_Q	Sync Lock Dropout Count, Q Channel		
Frame_Sync_Word_BER_I	Frame Sync Word BER, I Channel		
Frame_Sync_Word_BER_Q	Frame Sync Word BER, Q Channel		
DG1_Configuration	DG1 Configuration		0="I Channel Only" 1="Q Channel Only" 2="I and Q Channels"
Receiver_Configuration	Receiver Configuration		0="Normal" 1="Cross-support"
Channel_Power_Ratio	I/Q Channel Power Ratio	dB	
Data_Channel_Config	Data Channel Configuration		0="Single source, identical data" 1="Dual source" 2="Single source, alternate data"
SSA_Combining	SSA Combining		0="No" 1="Yes"
Range_Tracking_Status	Range Tracking Status		0="Inactive" 1="Normal" 2="Cross-support"
Data_Format_Conv_I	Data Format Conversion Configuration, I Channel		0="No" 1="Yes"
Data_Format_Conv_Q	Data Format Conversion Configuration, Q Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_I	Symbol Format Conversion Biphase to NRZ, I Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_Q	Symbol Format Conversion Biphase to NRZ, Q Channel		0="No" 1="Yes"
Data_Coding_I	Data Coding, I Channel		0="Uncoded" 1="Code 1 (Rate 1/2)" 2="Code 2 (Rate 1/2, G1 inv)" 3="Code 3 (Rate 1/3)"
Data_Coding_Q	Data Coding, Q Channel		0="Uncoded" 1="Code 1 (Rate 1/2)" 2="Code 2 (Rate 1/2, G1 inv)" 3="Code 3 (Rate 1/3)"
G2_Inversion_I	G2 Inversion, I Channel		0="Not inverted" 1="Inverted"
G2_Inversion_Q	G2 Inversion, Q Channel		0="Not inverted" 1="Inverted"
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-7. SSAR DG2 UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Elevation	Elevation	deg	
Polarization	Polarization		0="LCP" 1="RCP"
Doppler_Tracking	Doppler Tracking Status		0="Inactive" 1="One-way" 2="Two-way" 3="Cross-support"
IR_Lock	Integrated Receiver Lock Indicator		0="No Lock" (Red) 1="Lock" (Green)
IR_Signal_Strength	Integrated Receiver Signal Strength	dB-Hz	
Receiver_Coherency	Receiver Coherency Indicator		0="Noncoherent" 1="Coherent"
DG2_Modulation	DG2 Modulation		0="QPSK" 1="BPSK"
Dinterleaving	Deinterleaving Selection		0="No deinterleaving" 1="I Deinterleaved" 2="Q Deinterleaved" 3="I and Q Deinterleaved"
Symbol_Sync_Lock_I	Symbol Synchronizer Lock Indicator, I Channel		0="No Lock" 1="Lock"
Symbol_Sync_Lock_Q	Symbol Synchronizer Lock Indicator, Q Channel		0="No Lock" 1="Lock"
BER_Status_I	BER Status, I Channel		0="Status not valid" (Red) 1="BER $\geq 10^{-3}$ " (Red) 2="10 ⁻³ > BER $\geq 10^{-4}$ " (Red) 3="10 ⁻⁴ > BER $\geq 10^{-5}$ " (Red) 4="10 ⁻⁵ > BER $\geq 10^{-6}$ " (Green) 5="10 ⁻⁶ > BER $\geq 10^{-7}$ " (Green) 6="10 ⁻⁷ > BER $\geq 10^{-8}$ " (Green) 7="10 ⁻⁸ > BER $\geq 10^{-9}$ " (Green) 8="BER < 10 ⁻⁹ " (Green)
BER_Status_Q	BER Status, Q Channel		0="Status not valid" (Red) 1="BER $\geq 10^{-3}$ " (Red) 2="10 ⁻³ > BER $\geq 10^{-4}$ " (Red) 3="10 ⁻⁴ > BER $\geq 10^{-5}$ " (Red) 4="10 ⁻⁵ > BER $\geq 10^{-6}$ " (Green) 5="10 ⁻⁶ > BER $\geq 10^{-7}$ " (Green) 6="10 ⁻⁷ > BER $\geq 10^{-8}$ " (Green) 7="10 ⁻⁸ > BER $\geq 10^{-9}$ " (Green) 8="BER < 10 ⁻⁹ " (Green)
Frame_Sync_Mode_I	Frame Sync Mode, I Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Frame_Sync_Mode_Q	Frame Sync Mode, Q Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"

Clock_Presence_I	Clock Presence, I Channel		0="No" (Red) 1="Yes" (Green)
Clock_Presence_Q	Clock Presence, Q Channel		0="No" (Red) 1="Yes" (Green)
Data_Density_I	Data Transition Density, I Channel	%	
Data_Density_Q	Data Transition Density, Q Channel	%	
Frames_in_Lock_I	Percent Frames in Lock, I Channel	%	
Frames_in_Lock_Q	Percent Frames in Lock, Q Channel	%	
Sync_Dropout_Count_I	Sync Lock Dropout Count, I Channel		
Sync_Dropout_Count_Q	Sync Lock Dropout Count, Q Channel		
Frame_Sync_Word_BER_I	Frame Sync Word BER, I Channel		
Frame_Sync_Word_BER_Q	Frame Sync Word BER, Q Channel		
Receiver_Configuration	Receiver Configuration		0="Normal" 1="Cross-support"
Channel_Power_Ratio	I/Q Channel Power Ratio	dB	
Data_Channel_Config	Data Channel Configuration		0="Single source" 1="Dual source" 2="Single source, alternate data"
SSA_Combining	SSA Combining		0="No" 1="Yes"
Data_Format_Conv_I	Data Format Conversion Configuration, I Channel		0="No" 1="Yes"
Data_Format_Conv_Q	Data Format Conversion Configuration, Q Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_I	Symbol Format Conversion Biphase to NRZ, I Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_Q	Symbol Format Conversion Biphase to NRZ, Q Channel		0="No" 1="Yes"
Data_Coding_I	Data Coding, I Channel		0="Uncoded" 1="Code 1 (Rate 1/2) 2="Code 2 (Rate 1/2, G1 inv) 3="Code 3 (Rate 1/3)
Data_Coding_Q	Data Coding, Q Channel		0="Uncoded" 1="Code 1 (Rate 1/2) 2="Code 2 (Rate 1/2, G1 inv) 3="Code 3 (Rate 1/3)
G2_Inversion_I	G2 Inversion, I Channel		0="Not inverted" 1="Inverted"
G2_Inversion_Q	G2 Inversion, Q Channel		0="Not inverted" 1="Inverted"
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-8. SMAR DG1 UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Equipment_String_ID	SMAR Link ID		
Elevation	Elevation	deg	

Polarization	Polarization		0="LCP" 1="RCP"
Doppler_Tracking	Doppler Tracking Status		0="Inactive" 1="One-way" 2="Two-way" 3="Cross-support"
IR_Lock	Integrated Receiver Lock Indicator		0="No Lock" (Red) 1="Lock" (Green)
IR_Signal_Strength	Integrated Receiver Signal Strength	dB-Hz	
Receiver_Coherency	Receiver Coherency Indicator		0="Noncoherent" 1="Coherent"
DG1_Mode	DG1 Mode		1="Mode 1" 2="Mode 2" 3="Mode 3"
Dinterleaving	Deinterleaving Selection		0="No deinterleaving" 1="I Deinterleaved" 2="Q Deinterleaved" 3="I and Q Deinterleaved"
Symbol_Sync_Lock_I	Symbol Synchronizer Lock Indicator, I Channel		0="No Lock" 1="Lock"
Symbol_Sync_Lock_Q	Symbol Synchronizer Lock Indicator, Q Channel		0="No Lock" 1="Lock"
BER_Status_I	BER Status, I Channel		0="Status not valid" (Red) 1="BER >= 10 ⁻³ " (Red) 2="10 ⁻³ > BER >= 10 ⁻⁴ " (Red) 3="10 ⁻⁴ > BER >= 10 ⁻⁵ " (Red) 4="10 ⁻⁵ > BER >= 10 ⁻⁶ " (Green) 5="10 ⁻⁶ > BER >= 10 ⁻⁷ " (Green) 6="10 ⁻⁷ > BER >= 10 ⁻⁸ " (Green) 7="10 ⁻⁸ > BER >= 10 ⁻⁹ " (Green) 8="BER < 10 ⁻⁹ " (Green)
BER_Status_Q	BER Status, Q Channel		0="Status not valid" (Red) 1="BER >= 10 ⁻³ " (Red) 2="10 ⁻³ > BER >= 10 ⁻⁴ " (Red) 3="10 ⁻⁴ > BER >= 10 ⁻⁵ " (Red) 4="10 ⁻⁵ > BER >= 10 ⁻⁶ " (Green) 5="10 ⁻⁶ > BER >= 10 ⁻⁷ " (Green) 6="10 ⁻⁷ > BER >= 10 ⁻⁸ " (Green) 7="10 ⁻⁸ > BER >= 10 ⁻⁹ " (Green) 8="BER < 10 ⁻⁹ " (Green)
Frame_Sync_Mode_I	Frame Sync Mode, I Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Frame_Sync_Mode_Q	Frame Sync Mode, Q Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Clock_Presence_I	Clock Presence, I Channel		0="No" (Red) 1="Yes" (Green)
Clock_Presence_Q	Clock Presence, Q Channel		0="No" (Red) 1="Yes" (Green)
Data_Density_I	Data Transition Density, I Channel	%	
Data_Density_Q	Data Transition Density, Q Channel	%	
Frames_in_Lock_I	Percent Frames in Lock, I Channel	%	
Frames_in_Lock_Q	Percent Frames in Lock, Q Channel	%	
Sync_Dropout_Count_I	Sync Lock Dropout Count, I Channel		
Sync_Dropout_Count_Q	Sync Lock Dropout Count, Q Channel		

Frame_Sync_Word_BER_I	Frame Sync Word BER, I Channel		
Frame_Sync_Word_BER_Q	Frame Sync Word BER, Q Channel		
DG1_Configuration	DG1 Configuration		0="I Channel Only" 1="Q Channel Only" 2="I and Q Channels"
Receiver_Configuration	Receiver Configuration		0="Normal" 1="Cross-support"
Channel_Power_Ratio	I/Q Channel Power Ratio	dB	
Data_Channel_Config	Data Channel Configuration		0="Single source, identical data" 1="Dual source" 2="Single source, alternate data"
Range_Tracking_Status	Range Tracking Status		0="Inactive" 1="Normal" 2="Cross-support"
Data_Format_Conv_I	Data Format Conversion Configuration, I Channel		0="No" 1="Yes"
Data_Format_Conv_Q	Data Format Conversion Configuration, Q Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_I	Symbol Format Conversion Biphase to NRZ, I Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_Q	Symbol Format Conversion Biphase to NRZ, Q Channel		0="No" 1="Yes"
Data_Coding_I	Data Coding, I Channel		0="Uncoded" 1="Code 1 (Rate 1/2)" 2="Code 2 (Rate 1/2, G1 inv)" 3="Code 3 (Rate 1/3)"
Data_Coding_Q	Data Coding, Q Channel		0="Uncoded" 1="Code 1 (Rate 1/2)" 2="Code 2 (Rate 1/2, G1 inv)" 3="Code 3 (Rate 1/3)"
G2_Inversion_I	G2 Inversion, I Channel		0="Not inverted" 1="Inverted"
G2_Inversion_Q	G2 Inversion, Q Channel		0="Not inverted" 1="Inverted"
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-9. SMAR DG2 UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Equipment_String_ID	SMAR Link ID		
Elevation	Elevation	deg	
Polarization	Polarization		0="LCP" 1="RCP"
Doppler_Tracking	Doppler Tracking Status		0="Inactive" 1="One-way" 2="Two-way" 3="Cross-support"

IR_Lock	Integrated Receiver Lock Indicator		0="No Lock" (Red) 1="Lock" (Green)
IR_Signal_Strength	Integrated Receiver Signal Strength	dB-Hz	
Receiver_Coherency	Receiver Coherency Indicator		0="Noncoherent" 1="Coherent"
DG2_Modulation	DG2 Modulation		0="QPSK" 1="BPSK"
Dinterleaving	Deinterleaving Selection		0="No deinterleaving" 1="I Deinterleaved" 2="Q Deinterleaved" 3="I and Q Deinterleaved"
Symbol_Sync_Lock_I	Symbol Synchronizer Lock Indicator, I Channel		0="No Lock" 1="Lock"
Symbol_Sync_Lock_Q	Symbol Synchronizer Lock Indicator, Q Channel		0="No Lock" 1="Lock"
BER_Status_I	BER Status, I Channel		0="Status not valid" (Red) 1="BER >= 10-3" (Red) 2="10-3 > BER >= 10-4" (Red) 3="10-4 > BER >= 10-5" (Red) 4="10-5 > BER >= 10-6" (Green) 5="10-6 > BER >= 10-7" (Green) 6="10-7 > BER >= 10-8" (Green) 7="10-8 > BER >= 10-9" (Green) 8="BER < 10-9" (Green)
BER_Status_Q	BER Status, Q Channel		0="Status not valid" (Red) 1="BER >= 10-3" (Red) 2="10-3 > BER >= 10-4" (Red) 3="10-4 > BER >= 10-5" (Red) 4="10-5 > BER >= 10-6" (Green) 5="10-6 > BER >= 10-7" (Green) 6="10-7 > BER >= 10-8" (Green) 7="10-8 > BER >= 10-9" (Green) 8="BER < 10-9" (Green)
Frame_Sync_Mode_I	Frame Sync Mode, I Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Frame_Sync_Mode_Q	Frame Sync Mode, Q Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Clock_Presence_I	Clock Presence, I Channel		0="No" (Red) 1="Yes" (Green)
Clock_Presence_Q	Clock Presence, Q Channel		0="No" (Red) 1="Yes" (Green)
Data_Density_I	Data Transition Density, I Channel	%	
Data_Density_Q	Data Transition Density, Q Channel	%	
Frames_in_Lock_I	Percent Frames in Lock, I Channel	%	
Frames_in_Lock_Q	Percent Frames in Lock, Q Channel	%	
Sync_Dropout_Count_I	Sync Lock Dropout Count, I Channel		
Sync_Dropout_Count_Q	Sync Lock Dropout Count, Q Channel		
Frame_Sync_Word_BER_I	Frame Sync Word BER, I Channel		
Frame_Sync_Word_BER_Q	Frame Sync Word BER, Q Channel		
Receiver_Configuration	Receiver Configuration		0="Normal" 1="Cross-support"
Channel_Power_Ratio	I/Q Channel Power Ratio	dB	

Data_Channel_Config	Data Channel Configuration		0="Single source" 1="Dual source" 2="Single source, alternate data"
Data_Format_Conv_I	Data Format Conversion Configuration, I Channel		0="No" 1="Yes"
Data_Format_Conv_Q	Data Format Conversion Configuration, Q Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_I	Symbol Format Conversion Biphase to NRZ, I Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_Q	Symbol Format Conversion Biphase to NRZ, Q Channel		0="No" 1="Yes"
Data_Coding_I	Data Coding, I Channel		0="Uncoded" 1="Code 1 (Rate 1/2) 2="Code 2 (Rate 1/2, G1 inv) 3="Code 3 (Rate 1/3)
Data_Coding_Q	Data Coding, Q Channel		0="Uncoded" 1="Code 1 (Rate 1/2) 2="Code 2 (Rate 1/2, G1 inv) 3="Code 3 (Rate 1/3)
G2_Inversion_I	G2 Inversion, I Channel		0="Not inverted" 1="Inverted"
G2_Inversion_Q	G2 Inversion, Q Channel		0="Not inverted" 1="Inverted"
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-10. KSAR DG1 UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Elevation	Elevation	deg	
Autotrack_Status	Autotrack Status		0="Disabled" 1="No Signal Presence" 2="Signal Presence" 3="Zero Crossing" 4="Autotrack"
Polarization	Polarization		0="LCP" 1="RCP"
Doppler_Tracking	Doppler Tracking Status		0="Inactive" 1="One-way" 2="Two-way"
DG1_Mode	DG1 Mode		1="Mode 1" 2="Mode 2" 3="Mode 3"
Receiver_Coherency	Receiver Coherency Indicator		0="Noncoherent" 1="Coherent"

First_Demod_Type	First Demodulator Type Indicator, I Channel		1="IR" 2="HDDR"
First_Demod_Lock	First Demodulator Lock Indicator, I Channel		0="No Lock" (Red) 1="Lock" (Green)
First_Demod_Signal_Strength	First Demodulator Signal Strength, I Channel	dB-Hz	
Second_Demod_Type	Second Demodulator Type Indicator, Q Channel		1="IR" 2="HDDR"
Second_Demod_Lock	Second Demodulator Lock Indicator, Q Channel		0="No Lock" (Red) 1="Lock" (Green)
Second_Demod_Signal_Strength	Second Demodulator Signal Strength, Q Channel	dB-Hz	
Symbol_Sync_Lock_I	Symbol Synchronizer Lock Indicator, I Channel		0="No Lock" 1="Lock"
Symbol_Sync_Lock_Q	Symbol Synchronizer Lock Indicator, Q Channel		0="No Lock" 1="Lock"
BER_Status_I	BER Status, I Channel		0="Status not valid" (Red) 1="BER $\geq 10^{-3}$ " (Red) 2="10 ⁻³ > BER $\geq 10^{-4}$ " (Red) 3="10 ⁻⁴ > BER $\geq 10^{-5}$ " (Red) 4="10 ⁻⁵ > BER $\geq 10^{-6}$ " (Green) 5="10 ⁻⁶ > BER $\geq 10^{-7}$ " (Green) 6="10 ⁻⁷ > BER $\geq 10^{-8}$ " (Green) 7="10 ⁻⁸ > BER $\geq 10^{-9}$ " (Green) 8="BER < 10 ⁻⁹ " (Green)
BER_Status_Q	BER Status, Q Channel		0="Status not valid" (Red) 1="BER $\geq 10^{-3}$ " (Red) 2="10 ⁻³ > BER $\geq 10^{-4}$ " (Red) 3="10 ⁻⁴ > BER $\geq 10^{-5}$ " (Red) 4="10 ⁻⁵ > BER $\geq 10^{-6}$ " (Green) 5="10 ⁻⁶ > BER $\geq 10^{-7}$ " (Green) 6="10 ⁻⁷ > BER $\geq 10^{-8}$ " (Green) 7="10 ⁻⁸ > BER $\geq 10^{-9}$ " (Green) 8="BER < 10 ⁻⁹ " (Green)
Frame_Sync_Mode_I	Frame Sync Mode, I Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Frame_Sync_Mode_Q	Frame Sync Mode, Q Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Clock_Presence_I	Clock Presence, I Channel		0="No" (Red) 1="Yes" (Green)
Clock_Presence_Q	Clock Presence, Q Channel		0="No" (Red) 1="Yes" (Green)
Data_Density_I	Data Transition Density, I Channel	%	
Data_Density_Q	Data Transition Density, Q Channel	%	
Frames_in_Lock_I	Percent Frames in Lock, I Channel	%	
Frames_in_Lock_Q	Percent Frames in Lock, Q Channel	%	
Sync_Dropout_Count_I	Sync Lock Dropout Count, I Channel		
Sync_Dropout_Count_Q	Sync Lock Dropout Count, Q Channel		
Frame_Sync_Word_BER_I	Frame Sync Word BER, I Channel		
Frame_Sync_Word_BER_Q	Frame Sync Word BER, Q Channel		
Data_Format_Conv_I	Data Format Conversion Configuration, I Channel		0="No" 1="Yes"
Data_Format_Conv_Q	Data Format Conversion Configuration, Q Channel		0="No" 1="Yes"

Symbol_Fmt_Conv_BI-NRZ_I	Symbol Format Conversion Biphase to NRZ, I Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_Q	Symbol Format Conversion Biphase to NRZ, Q Channel		0="No" 1="Yes"
Data_Coding_I	Data Coding, I Channel		0="Uncoded" 1="Code 1 (Rate 1/2)"
Data_Coding_Q	Data Coding, Q Channel		0="Uncoded" 1="Code 1 (Rate 1/2)"
G2_Inversion_I	G2 Inversion, I Channel		0="Not inverted" 1="Inverted"
G2_Inversion_Q	G2 Inversion, Q Channel		0="Not inverted" 1="Inverted"
Receiver_Configuration	Receiver Configuration		0="Normal" 1="Cross-support"
Channel_Power_Ratio	I/Q Channel Power Ratio	dB	
Data_Channel_Config	Data Channel Configuration		0="Single source" 1="Dual source"
DG1_Configuration	DG1 Configuration		0="I Channel Only" 1="Q Channel Only" 2="I and Q Channels"
Range_Tracking_Status	Range Tracking Status		0="Inactive" 1="Normal"
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-11. KSAR/KaSAR DG2 UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Link_Status	Link Status		0="Active" (Green) 1="Pending" (Red) 2="Acq/Reacq" (Yellow)
Azimuth	Azimuth	deg	
Elevation	Elevation	deg	
Autotrack_Status	Autotrack Status		0="Disabled" 1="No Signal Presence" 2="Signal Presence" 3="Zero Crossing" 4="Autotrack"
Polarization	Polarization		0="LCP" 1="RCP"
Doppler_Tracking	Doppler Tracking Status		0="Inactive" 1="One-way" 2="Two-way"
DG2_Modulation	DG2 Modulation		0="QPSK", 1="BPSK"
Receiver_Coherency	Receiver Coherency Indicator		0="Noncoherent" 1="Coherent"
First_Demod_Type	First Demodulator Type Indicator, I Channel		1="IR" 2="HDDR"

First_Demod_Lock	First Demodulator Lock Indicator, I Channel		0="No Lock" (Red) 1="Lock" (Green)
First_Demod_Signal_Strength	First Demodulator Signal Strength, I Channel	dB-Hz	
Second_Demod_Type	Second Demodulator Type Indicator, Q Channel		1="IR" 2="HDDR"
Second_Demod_Lock	Second Demodulator Lock Indicator, Q Channel		0="No Lock" (Red) 1="Lock" (Green)
Second_Demod_Signal_Strength	Second Demodulator Signal Strength, Q Channel	dB-Hz	
Symbol_Sync_Lock_I	Symbol Synchronizer Lock Indicator, I Channel		0="No Lock" 1="Lock"
Symbol_Sync_Lock_Q	Symbol Synchronizer Lock Indicator, Q Channel		0="No Lock" 1="Lock"
BER_Status_I	BER Status, I Channel		0="Status not valid" (Red) 1="BER >= 10-3" (Red) 2="10-3 > BER >= 10-4" (Red) 3="10-4 > BER >= 10-5" (Red) 4="10-5 > BER >= 10-6" (Green) 5="10-6 > BER >= 10-7" (Green) 6="10-7 > BER >= 10-8" (Green) 7="10-8 > BER >= 10-9" (Green) 8="BER < 10-9" (Green)
BER_Status_Q	BER Status, Q Channel		0="Status not valid" (Red) 1="BER >= 10-3" (Red) 2="10-3 > BER >= 10-4" (Red) 3="10-4 > BER >= 10-5" (Red) 4="10-5 > BER >= 10-6" (Green) 5="10-6 > BER >= 10-7" (Green) 6="10-7 > BER >= 10-8" (Green) 7="10-8 > BER >= 10-9" (Green) 8="BER < 10-9" (Green)
Frame_Sync_Mode_I	Frame Sync Mode, I Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Frame_Sync_Mode_Q	Frame Sync Mode, Q Channel		0="Search" 1="Check" 2="Lock" 3="Flywheel"
Clock_Presence_I	Clock Presence, I Channel		0="No" (Red) 1="Yes" (Green)
Clock_Presence_Q	Clock Presence, Q Channel		0="No" (Red) 1="Yes" (Green)
Data_Density_I	Data Transition Density, I Channel	%	
Data_Density_Q	Data Transition Density, Q Channel	%	
Frames_in_Lock_I	Percent Frames in Lock, I Channel	%	
Frames_in_Lock_Q	Percent Frames in Lock, Q Channel	%	
Sync_Dropout_Count_I	Sync Lock Dropout Count, I Channel		
Sync_Dropout_Count_Q	Sync Lock Dropout Count, Q Channel		
Frame_Sync_Word_BER_I	Frame Sync Word BER, I Channel		
Frame_Sync_Word_BER_Q	Frame Sync Word BER, Q Channel		
Data_Format_Conv_I	Data Format Conversion Configuration, I Channel		0="No" 1="Yes"
Data_Format_Conv_Q	Data Format Conversion Configuration, Q Channel		0="No" 1="Yes"
Symbol_Fmt_Conv_BI-NRZ_I	Symbol Format Conversion Biphase to NRZ, I Channel		0="No" 1="Yes"

Symbol_Fmt_Conv_BI-NRZ_Q	Symbol Format Conversion Biphase to NRZ, Q Channel		0="No" 1="Yes"
Data_Coding_I	Data Coding, I Channel		0="Uncoded" 1="Code 1 (Rate 1/2)"
Data_Coding_Q	Data Coding, Q Channel		0="Uncoded" 1="Code 1 (Rate 1/2)"
G2_Inversion_I	G2 Inversion, I Channel		0="Not inverted" 1="Inverted"
G2_Inversion_Q	G2 Inversion, Q Channel		0="Not inverted" 1="Inverted"
Receiver_Configuration	Receiver Configuration		0="Normal" 1="Cross-support"
Channel_Power_Ratio	I/Q Channel Power Ratio	dB	
Data_Channel_Config	Data Channel Configuration		0="Single source" 1="Dual source"
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-12. KaSARWB DG2 UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Azimuth	Azimuth	deg	
Elevation	Elevation	deg	
Polarization	Polarization		0="LCP" 1="RCP"
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-13. EETF UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Polarization	Antenna Polarization		0="LCP" 1="RCP"
Sim_Gain_Temp	Simulation Gain/Temperature	dB/K	
Forward_Link_Freq	Forward Link Frequency	MHz	
Sim_Command_Channel_Lock	Simulation Command Channel Lock		0="No Lock" 1="Lock"
Sim_Carrier_Lock	Simulation Carrier Lock		0="No Lock" 1="Lock"
Sim_Bit_Sync_Lock	Simulation Bit Sync Lock		0="No Lock" 1="Lock"

BER_Status			0="Status not valid" (Red) 1="BER >= 10-3" (Red) 2="10-3 > BER >= 10-4" (Red) 3="10-4 > BER >= 10-5" (Red) 4="10-5 > BER >= 10-6" (Green) 5="10-6 > BER >= 10-7" (Green) 6="10-7 > BER >= 10-8" (Green) 7="10-8 > BER >= 10-9" (Green) 8="BER < 10-9" (Green)
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-14. EETR UPD Detail Parameters

Parameter Name	Description	Units	Enumeration Values/Severities
SUPIDEN	SUPIDEN		
Polarization	Antenna Polarization		0="LCP" 1="RCP"
Simulation_EIRP	Simulation EIRP	dBW	
Return_Link_Freq	Return Link Frequency	MHz	
TDRS_Yaw	TDRS Yaw	deg	
TDRS_Roll	TDRS Roll	deg	
TDRS_Pitch	TDRS Pitch	deg	

Table D-15. DASMAR UPD Detail Parameters (TBS)

Parameter Name	Description	Units	Enumeration Values/Severities

Appendix E. UPD Log File Format

E.1 General

The general format of the UPD log file stored on the Client workstation as described in Section 9.4 is as follows:

```
UPD
  TimeTag="YYYY/DDD_HHMMSS"
  SIC/Supiden="<supiden>"
  ServiceType="<upd_type>"
  TDRS="<TDRS>"
  AntennaLinkNumber="<antenna_link_id>"
  Mode="<mode>"
  <param1name>=<"param1value">
  <param2name>=<"param2value">
  <param3name>=<"param3value">
  .
  .
  <paramnname>=<"paramnvalue">
ENDUPD
```

In general, parameter or keyword assignments are of the following format:

<keyword>="<value>"

Where the <value> is always provided within quotes. In cases where a parameter may have no value, such as with the AntennaLink for MAF in the example, the value is still provided as a null value (e.g., AntennaLink=").).

The keywords shown above are defined as follows:

- UPD – start of a single UPD message.
- TimeTag – time tag from UPD message.
- SIC/Supiden – Support Identifier. SIC is stored instead of SUPIDEN for DAS services.
- ServiceType – UPD service type. A list of valid types is shown in Table 9-2. These types are derived from the UPD service types described in detail in Section 8 of the *NCCDS/MOC ICD*. Each type also contains data from the associated header packets. Separate UPD service types are provided for the various Data Group (DG) configurations. Optional Data Quality Monitoring (DQM) data is included with the appropriate return service packet.
- TDRS – TDRS name.
- AntennaLinkNumber – antenna number or link ID.

- Mode – OPS or EIF
- ENDUPD – end of a single UPD message.

E.2 UPD Parameter Values

The remainder of a stored UPD consists of a list of parameter names and their values. These names are defined for each service in Appendix D, Tables D-1 through D-15. For enumerated parameters, the text value is stored.

E.3 Sample File

Following is a sample of a UPD log file. In this case only two UPD messages are shown. For brevity not all UPD parameter values are shown.

```

UPD
  TimeTag="2002/310_213205"
  SIC/Supiden="B1294CS"
  ServiceType="MAF"
  TDRS="TDE"
  AntennaLinkNumber=" "
  Mode="EIF"
  Elevation="+45.0"
  TDRS_Roll="000.0"
  TDRS_Pitch="000.0"
  TDRS_Yaw="000.0"
  SUPIDEN="B1294CS"
  Clock_Presence="Yes"
  Azimuth="+90.0"
  Signal_EIRP="+30.0"
  Link_Status="Active"
  Radiated_Freq="02106.40854"
  Data_Density="30"
ENDUPD

UPD
  TimeTag="2002/310_213205"
  SIC/Supiden="B1294CS"
  ServiceType="MAR"
  TDRS="TDE"
  AntennaLinkNumber="01"
  Mode="EIF"
  Beamforming_Equip_ID="03"
  Mode="Mode 2 (Non-coherent)"
  Symbol_Fmt_Conv_BI-NRZ_Q="No"
  .
  .
  Data_Format_Conv_Q="No"
  TDRS_Yaw="000.0"
  Sync_Dropout_Count_I="99999999"
ENDUPD

```

Abbreviations and Acronyms

ASAR	Alternate Schedule Add Request
ANCC	Auxiliary Network Control Center
CCR	Configuration Change Request
CCS	Communications and Control Segment
DAS	Demand Access System
DASCON	Demand Access System Controller
DBA	Database Administrator
DCN	Document Change Notice
DSMC	Data Services Management Center
EIF	Engineering Interface
FOUO	For Official Use Only
GCMR	Ground Control Message Request
GMT	Greenwich Mean Time
GSFC	Goddard Space Flight Center, Greenbelt, MD
GUI	Graphical User Interface
ICD	Interface Control Document
IIRV	Improved Interrange Vector
IONET	Internet Protocol Operational Network
IP	Internet Protocol
JRE	Java Runtime Environment
JVM	Java Virtual Machine
MA	Multiple Access
MOC	Mission Operations Center
NISN	NASA Integrated Services Network
NCC	Network Control Center

NCCDS	NCC Data System
NPG	NCCDS Protocol Gateway
RR	Replace Request
SA	Single Access
SAR	Schedule Add Request
SDR	Schedule Delete Request
SN	Space Network
SDIF	SWSI-DAS Interface
SIC	Support Identification Code
SNIF	SWSI-NCCDS Interface
SPS	Service Planning Segment
SRM	Schedule Result Message
SSC	Service Specification Code
SSL	Secure Socket Layer
STDN	Spaceflight Tracking and Data Network
STGT	Second TDRSS Ground Terminal
SUPIDEN	Support Identifier
SWSI	SN Web Services Interface
TBD	To Be Determined
TBS	To Be Supplied
TCP	Transmission Control Protocol
TDRS	Tracking and Data Relay Satellite
TDRSS	Tracking and Data Relay Satellite System
TSW	TDRS Scheduling Window
TUT	TDRSS Unscheduled Time
UPD	User Performance Data
USM	User Schedule Message
WLR	Wait List Request

WSC

White Sands Complex

WSGT

White Sands Ground Terminal